

Manufacturers RECORD

An Exponent of Americanism

Entered as second-class matter at the Postoffice at Baltimore, Md., under the Act of March 3, 1879

Vol. LXXIV No. 19
WEEKLY
ESTABLISHED 1882

BALTIMORE, MD., NOVEMBER, 7 1918

\$6.50 PER YEAR
SINGLE COPY 15 CENTS

The Awful Agony of Four Years Shall the Fiends Who Are Responsible Sit at the Peace Table?

Four years of daily, deadly agony on the battlefield and at home!

Four years of indescribable horror from the ever-present danger of possible doom of all loved ones and of their beloved countries!

Four years in a death grapple with a giant blood-sucking tiger fiercely seeking to sink his fangs into mother, wife, babies!

O God, the awful agony of these years as the soldiers of our Allies by day and by night met the onrush of the tiger beast, fighting often almost a forlorn hope against the utmost power of hell itself as these devils incarnate sought to conquer, to maim, to outrage, to vent their foul passions in one great orgy of beastly war upon women and children and civilization!

Earth never knew such a crime before; earth never before gave birth to such fiends or to such a fiendish crime, vast in its magnitude, stupendous in detail as planned and executed by these foul beasts vomited from the womb of hell, who sank deep into millions of hearts their blood-sucking fangs.

Heaven seemed to shudder. Hell gloried that its minions had surpassed all of its wildest teachings.

Against this awful outpouring of the vilest vileness brewed in hell, millions of heroes died to save their loved ones and all civilization.

Into the mighty contest, three years late, it is true, hearing from those who had saved us the cry: "How could America leave the women and children of Belgium and France in hell for nearly three years?" our heroic men rushed and died in the glory of youth to save our women and children from the same hell.

And yet pacifist traitors, male and female, who have no sons to fight and die for others, who have no Calvary on which to lay their own lives, talk about saving the beast from punishment that he may breed and breed and keep on breeding the same blood-lusting tiger, the same brutish progeny of rapers and murderers, and they profess to do it in the name of Christianity!

To men whose sins were as white as the driven snow as compared with the fangs that are gory with human blood, and whose hands are black with every crime ever recorded in the history of earth's foulest criminals, Christ said:

"Ye serpents, ye generation of vipers, how can ye escape the damnation of hell!"

We almost wonder if even the Christ whose scathing arraignment of the Pharisees and false teachers of His day has never been equaled in the world's literature could find language in which to adequately denounce the measureless wickedness of Germany and the German nation.

And shall we parley with such beasts?

Shall we let them sit at the peace table, or shall we say, "As in the world to come ye cannot escape the damnation of hell, neither can ye in this world escape full punishment to the extent of human power to inflict for all your fearful crimes?"

ON TO BERLIN!

Read and ponder over one of the most fearful passages in the Word of God and see how it fits the German situation:

PROVERBS, CHAPTER I.

24. Because I have called, and ye refused; I have stretched out my hand, and no man regarded;
25. But ye have set at nought all my counsel and would none of my reproof;
26. I also will laugh at your calamity; I will mock when your fear cometh;
27. When your fear cometh as desolation, and your destruction cometh as a whirlwind; when distress and anguish cometh upon you.
28. Then shall they call upon me, but I will not answer; they shall seek me early, but they shall not find me:
29. For that they hated knowledge, and did not choose the fear of the Lord:
30. They would none of my counsel: they despised all my reproof.
31. Therefore shall they eat of the fruit of their own way, and be filled with their own devices.

Bethlehem Steel Company

South Bethlehem, Pennsylvania

PIG IRON: Basic, Bessemer, Foundry, Low Phosphorus, Mayari, Ferro-Manganese, Spiegeleisen.

CASTINGS: Steel and Iron, Brass, Bronze and Manganese.

FORGINGS: Drop, Hammered, Hydraulically Pressed, Solid and Hollow, Rough and Finished Machined; Cement Mill, and Ore Crusher Balls.

RAILS: Standard, Girder, Guard, High Tee, Industrial; Splice Bars, Tie Plates, Bolts, Frogs, Switches, Signals.

SWITCH STANDS: To Meet Every Track Condition; High, Intermediate and Low Stands, Adjustable and Non-Adjustable.

MANARD ANVIL-FACE FROGS: Equipped with "Mayari" Never-Turn Bolts. All Bolts Receiving Side Thrust of Wheels Are HEAT TREATED.

STRUCTURAL STEEL SHAPES: Bethlehem Beams, Girders and Columns; Standard Beams, Channels and Angles.

TOOL STEELS: Carbon, High Speed, Drill, Finishing and Special.

STANDARD, ALLOY and SPECIAL STEELS: Chrome Nickel, Chrome Vanadium, Mayari, Case Hardened, Special; Treated, Tempered and Cold Drawn.

TIN PLATES: Black, and Tinned Plates; Stamping and Enameling Stock.

BAR IRON: Refined Bar Iron, Double Refined, Chain, Staybolt, Special Staybolt and Engine Bolt Iron.

BOLTS: All Kinds, Plain and Galvanized, Machine, Carriage, Lag, Plow and Patch, HEAT TREATED Simple Alloy Mayari Steel Frog, Track and Fitting-up Bolts.

NUTS: Hot and Cold Pressed, Cold Punched, and Forged; All Sizes, Shapes and Standards; Blank or Tapped, Chamfered, Trimmed and Reamed, Case Hardened, Castle, Semi-Finished and Finished.

RIVETS: Boiler, Bridge, Structural, Ship, Tank and Tap.

SPIKES: Steel and Iron, Standard Railroad, Screw Railroad Track, Universal Screw, Boat, Dock and Wharf, Pressed and Rolled.

ENGINEERS AND BUILDERS OF SPECIAL MACHINERY,

Forgings and Castings for Large Marine Engines,

Hydraulic Beam and Gap Shears, Plate Bending Rolls, Intensifiers, Flanging and Forging Presses.

FURNACE and FOUNDRY COKE and COKE BY-PRODUCTS,

Ammonium Sulphate, Benzol, Crude Napthaline, Solvent Napthas, Toluol, Tar.

Pumping Engines for Municipal Purposes, Gas Engines.

NAVAL and COAST DEFENCE GUNS and MOUNTS, FIELD GUNS and HOWITZERS,

Gun Carriages, Limbers and Caissons, Gun Forgings, Torpedo Air Flasks, Armor Plate,

Projectiles, Fuses, Cartridge Cases, Complete Rounds of Ammunition.

Works at

SOUTH BETHLEHEM, PA. LEBANON, PA. READING, PA. STEELTON, PA. TITUSVILLE, PA. SPARROWS POINT, MD.

Warehouses at

SOUTH BETHLEHEM, PA. LEBANON, PA. BOSTON, MASS. CLEVELAND, O.

General Offices: SOUTH BETHLEHEM, PENNSYLVANIA

Branch Offices:

ATLANTA, GA.....Candler Bldg.	CLEVELAND, O.....Guardian Bldg.	PITTSBURGH, PA., First Nat'l Bank Bldg.
BALTIMORE, MD.....Continental Bldg.	DETROIT, MICH.....Penobscot Bldg.	ST. LOUIS, MO.....Boatmen's Bank Bldg.
BOSTON, MASS.....Oliver Bldg.	NEW YORK, N. Y.....Trinity Bldg.	SAN FRANCISCO, CAL.....Crocker Bldg.
CHICAGO, ILL.....People's Gas Bldg.	PHILADELPHIA, PA.....Morris Bldg.	WASHINGTON, D. C.....Wilkins Bldg.

25 Victoria Street, LONDON, S. W., ENGLAND.
RIO DE JANEIRO, BRAZIL.

SANTIAGO, CHILE.
LIMA, PERU.

7, 1968



J. E. Sirrine, Engineer and Architect.
T. C. Thompson & Bros., Contractors.

Concrete construction, because of its low initial cost and its advantage of permanence and rigidity, is coming more and more into favor. This type of construction permits making the sidewalls almost entirely of glass, as in the Roanoke Mills. Fenestra Solid Steel Windows throughout.

The New Idea in Textile Mills

J. E. Sirrine, prominent Textile Architect of Greenville, writes in his book, "Modern Mill Construction"—"It is probable that within a few years, the majority of mills will be of the reinforced concrete type, having large window areas and consequently well lighted interiors."

The Roanoke Mills, illustrated above and below, is a good example of this new idea in textile mills. The wide areas of the sidewalls between the columns are entirely filled with FENESTRA SOLID STEEL WINDOWS.

This type of construction spells protection:

—Protection for the eyesight by providing an abundance of natural light over the entire floor area.

—Protection for the health by assuring ample,

regulated ventilation—the elimination of close, stuffy interiors.

—Protection against fire, both from within and without.

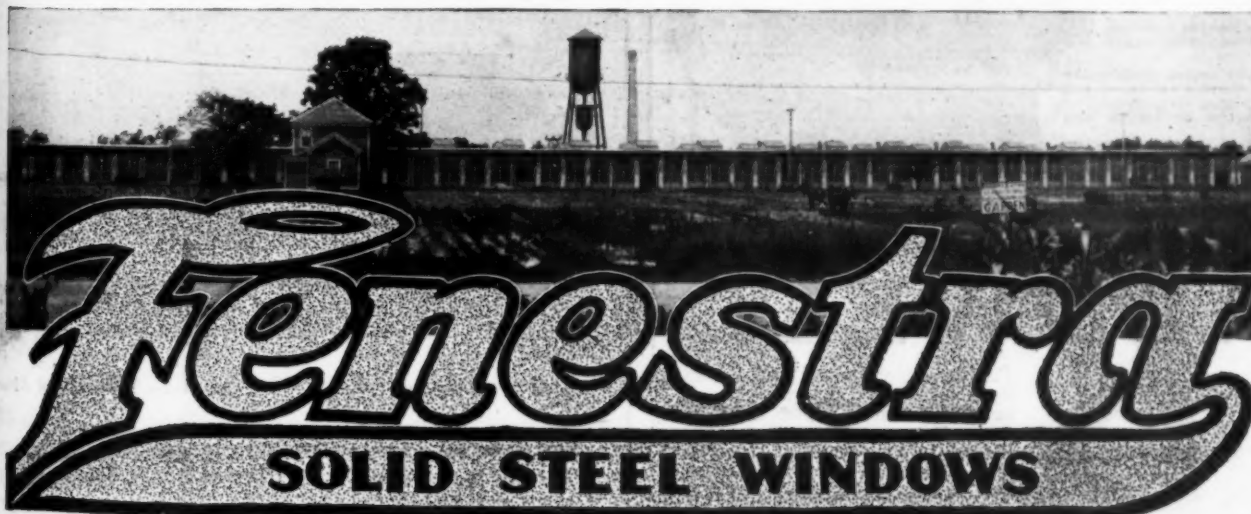
—Protection against storms and the drafts that leaky wooden windows admit.

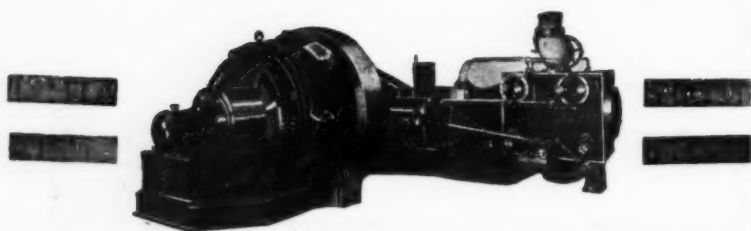
Increased profits through decreased spoilage, increased production and reduced accidents, combined with low maintenance costs, result where buildings are properly constructed and daylighted. The part that Fenestra Solid Steel Windows play is explained in our new booklet, "Daylight Pays Dividends in Textile Mills." A copy will be sent to you on request.

Detroit Steel Products Company

4308 East Grand Boulevard

Detroit, Michigan





BALL CORLISS ENGINE

WITH NON-RELEASING GEAR

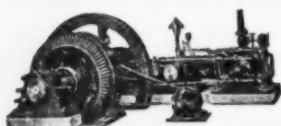
THE essential feature in a power unit is *Reliable Operation*. It's a fact that you can't get away from. The wheels must go 'round in order to keep up production. In many plants the actual cost of power is a small item in the cost of the product, but an interruption to service is a costly item.

Ball engines are built to meet the needs of particular buyers, men who appreciate that it takes good design, good workmanship, and good materials to meet the demands of modern power plant practice.

Surround your plant with an atmosphere of security by installing a Ball Engine

It's a paying investment

BALL ENGINE CO., ERIE, PA.



CORLISS ENGINES

Boilers of All Styles and Sizes

MURRAY IRON WORKS COMPANY

BURLINGTON, IOWA

INCORPORATED FEBRUARY 1, 1870.

Engine on Exhibition in the Bourse, Philadelphia, Pa.

For Cheap, Dependable Power

The St. Marys SUPER-DIESEL OIL ENGINE

It is *cheap* because it operates on kerosene, solar oil, fuel oil or cheap distillate.

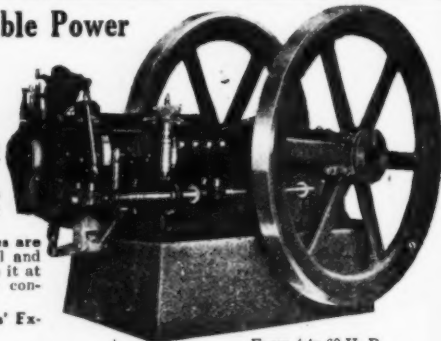
It is *dependable* because it uses no magneto, battery, coils, spark plug, etc.

99% of customary engine troubles are eliminated. Turning on the oil and turning the engine over, starts it at once, irrespective of weather conditions.

Simple and Strong, with 30 Years' Experience Behind It.

WRITE FOR CATALOGUE

THE ST. MARYS OIL ENGINE CO., ST. CHARLES, MO.



From 4 to 60 H. P.

CALDWELL



Pulleys, Rope Sheaves, Chilled Rim Sprocket Wheels, Gears with Cut or Cast Teeth, Elevator Buckets, Boots, Bolts, "HELICOID" Screw Conveyors, Conveyor Troughs, Linings and Fittings, Belt Conveyors, Mill Magnets, Bearings, Collars, Couplings, Complete Rope Transmissions, Screens, Perforated Metal.

We Pride Ourselves on Our "Prompt Service."

**H. W. CALDWELL
& SON CO.**

CHICAGO . . . 17th St. and Western Ave.
DALLAS, TEXAS . . . 709 Main St.

CLARK BROS. CO.

OLEAN, N. Y.

Manufacturers of

**Triple and Compound Marine Engines
Corliss and Automatic Engines**

**Sawmill Machinery both Portable
or Stationary Band or Circular**

**We invite your Inquiries
and Specifications**

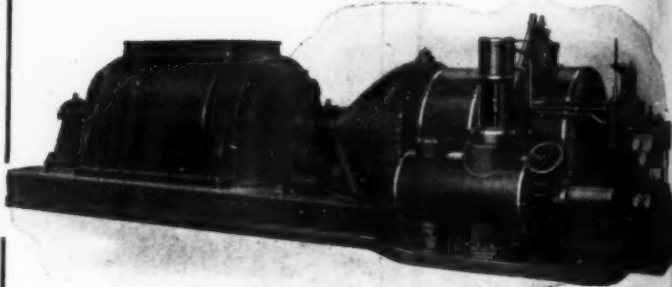
Established 1880

Efficiency—Reliability—Simplicity

Allis-Chalmers Steam Turbines

Show sustained economy after years of operation

Units built in sizes from 200 K. W. up



4000 K. W. Max. 80% P. F. 3600 R.P.M. Steam Turbine and Alternator

Allis-Chalmers Manufacturing Co.

Milwaukee, Wis.

Sales Offices in All Principal Cities

For all Canadian business refer to Canadian Allis-Chalmers
Ltd., Toronto, Ont., Canada

GROMMETS AND WASHERS

Brass and White Metal




Japanned in Any Color

STIMPSON

70 FRANKLIN AVENUE
BROOKLYN, NEW-YORK

THE VILTER MANUFACTURING CO.
632 Clinton Street MILWAUKEE, WIS.



Ice and Refrigerating Machinery
CORLISS ENGINES

ENGINES BOILERS

Steel Casing Settings, Heaters, Stacks, Tanks, Stills

THE HOUSTON, STANWOOD & GAMBLE Co.
CINCINNATI

The South's Power in the South

Are you interested in machinery of any kind? If so, write the undersigned.

We are Southern Manufacturers and Make our own Engines and Boilers and guarantee them; when you deal with us you get the benefit of over 50 years' experience.

Our Engines and Boilers are now in use in many of the Ginneries, Oil Mills, Saw Mills and other manufacturing enterprises throughout the Southern States and Middle West.

We also make a specialty of

TANKS, TANKS AND TOWERS, SMOKE STACKS AND ALL KINDS OF BOILER WORK

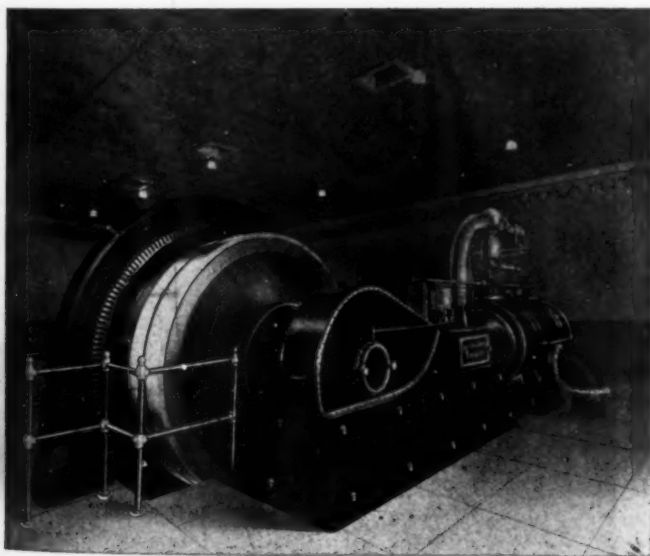
We make Cane Mills and Syrup Kettles, Pulleys, Castings, etc. Write us for prices on our Plantation Pumping Outfits, Saw Mills, Shingle Mills, Planers and Matchers, and Wood Splitters. Write at once, advising your wants. Also carry large stock Mill Supplies, Pipe, Roofing, Belting, Fittings, etc.

SCHOFIELD'S IRON WORKS

Dept. H, MACON, GA., U. S. A.

Please mention this paper.

The Ames Una-Flow Engine



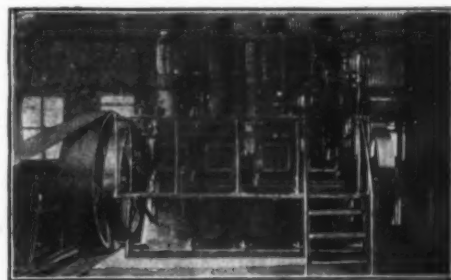
500 H. P. AMES UNA-FLOW ENGINE INSTALLATION

The superiority of the Ames Una-Flow is because of Ames design and workmanship built in the engine. Repeat orders from satisfied customers justify our claims and guarantees. Condensing and non-condensing in sizes 50 to 1000 H. P.

AMES IRON WORKS
OSWEGO, N. Y.

Offices in All Principal Cities

In use by U. S.
and Foreign
Governments,
Municipalities
and Leading
Industries
Throughout the
World



Reliability

**BUY
W.
S.
S.**

More than twenty years' experience is back of every **Mietz Oil Engine**. This experience combined with the care used in the selection of material and the one thought of building an engine with as few parts as possible, an engine to give the best continuous service at the lowest operating expense and upkeep. That's our aim—we live up to it.

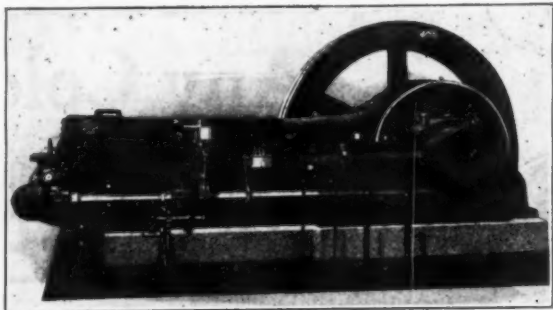
Ask any **Mietz Oil Engine** user.

Catalog with full details gladly on request

August Mietz Corporation

129 Mott Street, New York

DE LA VERGNE DIESEL ENGINE



Send for our Bulletins

De La Vergne Machine Company

1107 EAST 138th STREET NEW YORK CITY

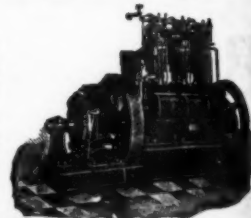
Oil Engines, Ice-Making
and
Refrigerating Machines

THE FOOS

Run on Oil and Gas

1½ to 400 H. P.

Inbuilt Quality explains the leadership of this great engine—for instance, the 28 years' record of the engine owned by Frank R. Lemon, Vicksburg, Mich., and thousands of other engines that have been in operation from 10 to 25 years.

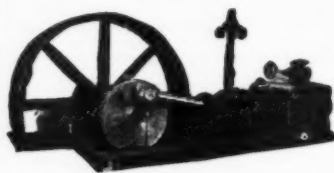


THE FOOS GAS ENGINE CO., SPRINGFIELD, OHIO

Hardie-Tynes Mfg. Co.

Builders:

Corliss Engines
Air Compressors
Mining Hoist
Heavy Castings



FOR CATALOGUE AND PRICES

Address HARDIE-TYNES MFG. CO.

Birmingham, Ala., U. S. A.

50 H. P. SELF STARTING CRUDE OIL ENGINES

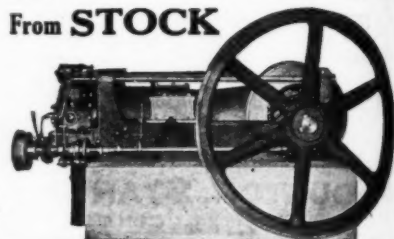
Starts on its own fuel—no storing of compressed air.
No hot bulb—no standby losses.
Save fuel—Save wages.

From STOCK

BOEC
OIL ENGINES

Burn any liquid fuel.
Designed for American conditions.

Baltimore Oil Engine Co.
BALTIMORE, MD.



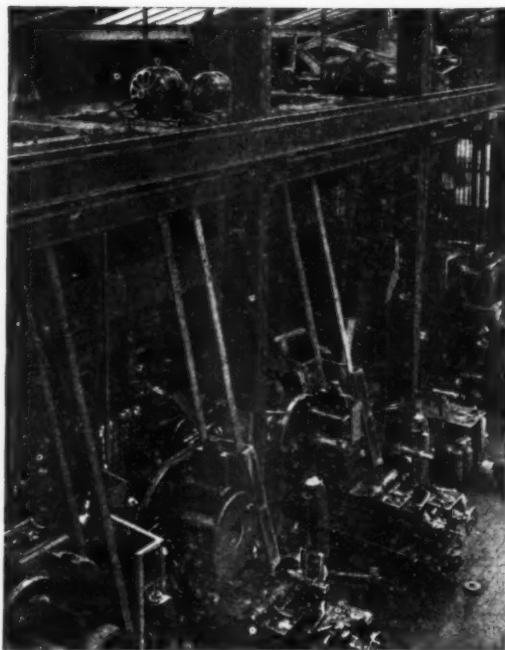
Are You Dependent on Power for Production?

If you are, then you need dependable motors. And to be dependable a motor must be quality-built inside and out.

Wagner, Quality

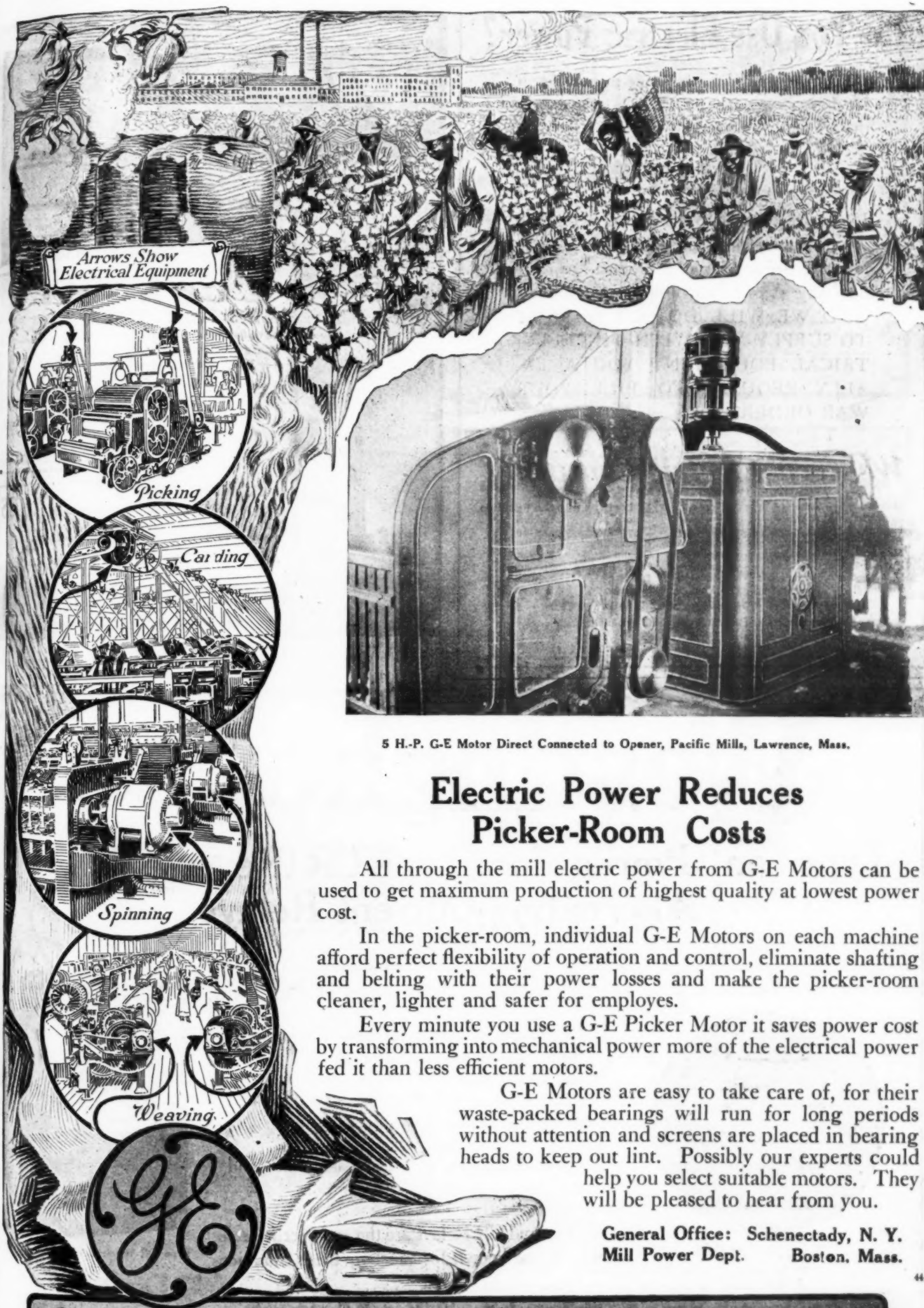
That is why quality is so important to you. That is why you should buy Wagner, Quality Motors.

Send for Bulletins 1108 and 1178.



Three Wagner Motors in machine shop.

Wagner Electric Manufacturing Company,
Saint Louis, Missouri



Arrows Show Electrical Equipment

Picking

Cat ding

Spinning

Weaving

GE

5 H.-P. G-E Motor Direct Connected to Opener, Pacific Mills, Lawrence, Mass.

Electric Power Reduces Picker-Room Costs

All through the mill electric power from G-E Motors can be used to get maximum production of highest quality at lowest power cost.

In the picker-room, individual G-E Motors on each machine afford perfect flexibility of operation and control, eliminate shafting and belting with their power losses and make the picker-room cleaner, lighter and safer for employees.

Every minute you use a G-E Picker Motor it saves power cost by transforming into mechanical power more of the electrical power fed it than less efficient motors.

G-E Motors are easy to take care of, for their waste-packed bearings will run for long periods without attention and screens are placed in bearing heads to keep out lint. Possibly our experts could help you select suitable motors. They will be pleased to hear from you.

General Office: Schenectady, N. Y.
Mill Power Dept. Boston, Mass.

GENERAL ELECTRIC COMPANY

Do You Use Electric Power?

If your old motor can be made to run, use it for the present; even if it is old style or you thought of getting a more modern.

BUT

If you are engaged in actual war work and must extend your plant facilities to meet an increased demand for your product—take the necessary steps to obtain a priority order—AND WE WILL DO OUR UTMOST TO SUPPLY YOU WITH THE ELECTRICAL EQUIPMENT YOU ACTUALLY REQUIRE TO FILL YOUR WAR ORDERS.


Western Electric Company

INCORPORATED

New York	Atlanta	Chicago	St. Louis	San Francisco
Syracuse	Baltimore	Cleveland	Duluth	Oakland
Newark	Richmond	Buffalo	Cincinnati	Los Angeles
Boston	Memphis	Indianapolis	Kansas City	Seattle
New Haven	Savannah	Detroit	Omaha	Portland
Providence	Charlotte	Milwaukee	Oklahoma City	Spokane
Philadelphia	Birmingham	Minneapolis	Dallas	Salt Lake City
Pittsburgh	New Orleans	St. Paul	Houston	Denver

EQUIPMENT FOR EVERY ELECTRICAL NEED

Member Society for Electrical Development. "Do It Electrically"



VICTORY

Victory in war, as achievement in commerce, depends largely upon care in attention to details—such details, for instance, as the selection of fuses.

A poorly operating or inaccurately rated fuse might seriously hinder the work on a man-of-war at a critical moment. The U. S. Navy is keenly awake to this fact.

ECONOMY

renewable FUSES

have for years effectively safeguarded electrical circuits of our Navy, ashore and afloat.

A new contract was recently awarded for another year's supply.

Economy Fuses cut annual fuse maintenance cost 80 per cent. because an inexpensive "Drop Out" Renewal Link restores a blown Economy Fuse to its original efficiency.

Order by brand, from your electrical jobber or dealer.

ECONOMY FUSE & MFG. CO.

Kinzie & Orleans Sts. CHICAGO, U. S. A.

Sole manufacturers of "ARKLESS"—the Non-Renewable Fuse with the "100% Guaranteed Indicator."

ECONOMY FUSES ARE ALSO MADE IN CANADA AT MONTREAL

Westinghouse

Type CO (Overload) and Type CR (Reverse Power) Alternating-Current Relays

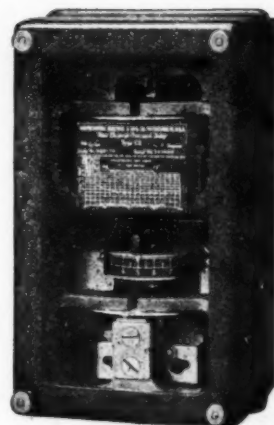
Three Features in central station operation are of vital importance at this time:

1. Protection of electrical power equipment from short circuits and grounds.
2. Prevention of interruptions in service and costly shutdowns, due to line trouble.
3. Efficient loading of transmission lines and distribution feeders.



Type CO Overload Relay

Types CO and CR Relays are the most accurate and reliable means known for meeting these conditions.



Type CR Reverse Power Relay

Westinghouse Electric & Manufacturing Co.

EAST PITTSBURG - PENNSYLVANIA

USE Renewed Tungsten Lamps

in place of Carbon Lamps. It conserves fuel and gives greater satisfaction.

Send orders to

BOSTON-ECONOMY LAMP DIVISION
NATIONAL LAMP WORKS OF GENERAL ELECTRIC CO.
43 Hospital Street PROVIDENCE, R. I.

Electrical Machinery Repaired

GENERATORS—ARMATURES—TRANSFORMERS



Burned Out Motors and Generators Rewound. High Grade Armature Rewinding. Prompt Service. Workmanship Guaranteed.

CHARLOTTE ELECTRIC REPAIR CO. Charlotte, N. C.
The Best Equipped Electrical Repair Works in the South



ELECTRICAL SUPPLIES

WHOLESALE

DOUBLEDAY-HILL ELECTRIC CO.

Southern Warehouse

WASHINGTON, D. C.

Lowest Prices

Quality Considered

**"For
Active
Service"**

From a purely scientific standpoint, this Company is proud of its contribution to the theory of Electrical Measurement. It is still more proud of

Weston

Indicating Instruments

In design, in material, in their structural perfection, they are thoroughly worthy to represent Weston ideas and ideals in the field of active service.

Weston Electrical Instrument Company

111 Weston Ave., Newark, N. J.

Richmond Office: Allison Bldg., Richmond, Va.

23 Branch Offices in the Larger Cities.



The Weston A. C. Round Pattern Switch-board Group includes Ammeters, Voltmeters, Wattmeters (Single and Polyphase), Power Factor Meters, Frequency Meters and Synchroscopes.

Besides their extreme accuracy and serviceability, these instruments are highly desirable for their uniformity of size and style, the openness of their scales and their legibility from any angle.

ALUMINUM

Feeder Cable Bare and Insulated

Transmission Cable

Aluminum-Steel Reinforced

FOR

EXCEPTIONALLY LONG SPANS

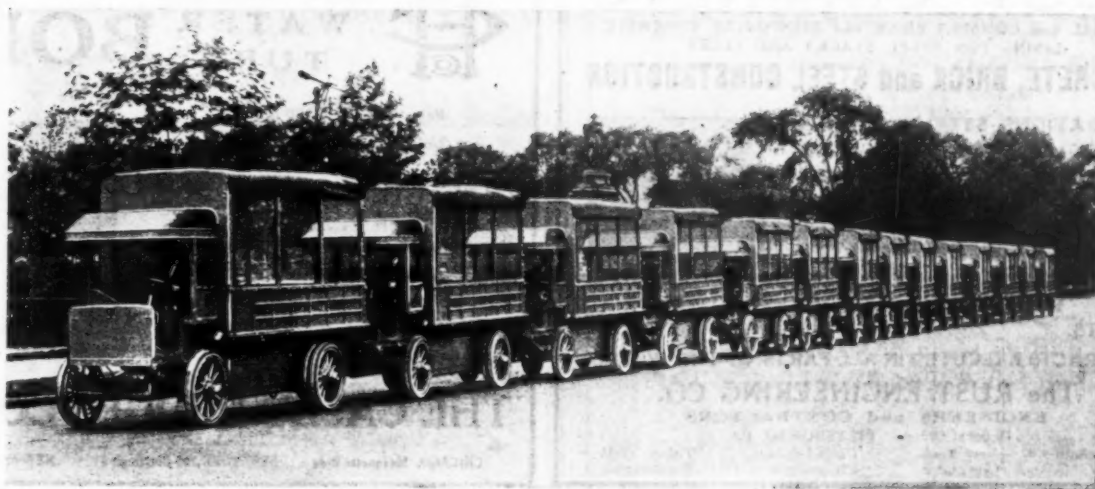
ALUMINUM CO. OF AMERICA

PITTSBURGH, PA

WASHINGTON

CHICAGO

KANSAS CITY



"Battleship Grays" Ready for Action

Here is a fleet of electrics in the service of the American Railway Express Company, dressed in their new color, Battleship Gray.

They are ready for action, ready to give the prompt and efficient service that the country now demands.

Their equipment includes Edison Batteries as the

Bulletin 500 "M" will interest you.

source of power. This is an assurance of dependability—of "on the job every minute" service.

Is your trucking situation difficult because of mounting costs, "gasless" days, lack of skilled drivers?

Investigate the electric vehicle. Get ready for action. Learn the economy of the electric—under all conditions.

EDISON STORAGE BATTERY COMPANY

Factory and Main Office:

ORANGE, N. J.

Distributors in New York, Boston, Chicago, Detroit, San Francisco, Seattle, Los Angeles, New Orleans, Pittsburgh, Kansas City, Washington, Philadelphia



Giving Service

And it is service by which the value of valve equipment should be determined.

LUNKENHEIMER
"Victory" Gate Valves

Because of the high quality materials used, and their practical design, give that continuous service necessary for maximum production and economy in plant maintenance. Their construction also embodies the added advantage of the renewability of all the parts. This permits the repair or replacement of a part should necessity require, and not only saves considerable time and expense, but also aids in the conservation of equipment — an important war measure.

THE LUNKENHEIMER CO.
Largest Manufacturers of High Grade Engineering Specialties in the World

New York Chicago CINCINNATI Boston London



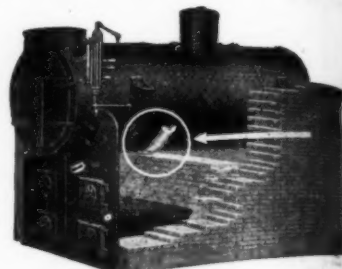

C-19-02

Make Boiler Repairs Permanent

When the boiler leaks at the girth seams it is time to make repairs if boiler efficiency is to be maintained. The big question is whether repairs are to be temporary or permanent.

USE NATIONAL GIRTH SEAM PROTECTOR

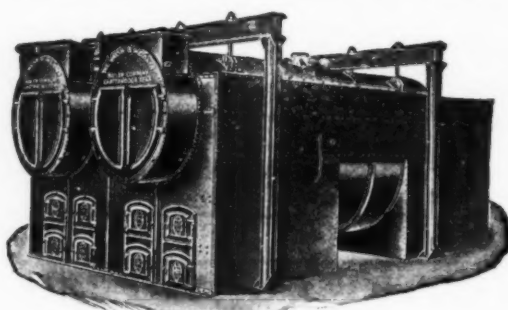
This insures the satisfactory performance of the boiler and saves the expense of future repairs, to say nothing of worry.



ASK YOUR ENGINEER

NATIONAL BOILER PROTECTOR CO.
Reibold Bldg., DAYTON, OHIO

BOILERS OF ALL TYPES



WITH OR WITHOUT
STEEL CASINGS
—
TANKS AND TOWERS
—
STRUCTURAL STEEL WORK

THE WALSH & WEIDNER BOILER CO.

CHATTANOOGA, TENN.

BRANCH SALES OFFICES—New York / New Orleans / Dallas / Birmingham / Havana

RUST CHIMNEYS

RADIAL and COMMON BRICK and REINFORCED CONCRETE LINING FOR STEEL STACKS AND FLUES

CONCRETE, BRICK and STEEL CONSTRUCTION

FOUNDATIONS, STEEL WORK and BOILERS ERECTED. BRICK and CONCRETE WORK FURNISHED COMPLETE for the INSTALLATION of BOILERS, FURNACES, STILLs, SAW MILL REFUSE BURNERS, COTTON SEED STORAGE BINS, STORAGE TANKS and BINS. BUILDINGS and COMPLETE INDUSTRIAL PLANTS.



CONTRACTS EXECUTED IN ALL PARTS OF THE WORLD.

The RUST ENGINEERING CO.

ENGINEERS and CONTRACTORS

General Offices: PITTSBURGH, PA.

Birmingham New York Philadelphia Tulsa, Okla.
Chicago Cleveland Pittsburgh Washington

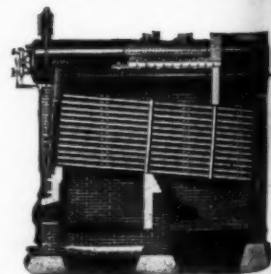


HORIZONTAL

WATER TUBE BOILER

Pressures 160 to 300 Lbs.
Units 100 to 1,000 H. P.

All steel construction. Drop forged, everlasting H H plates. Baffling, vertical, horizontal or combination. Supported free of brick work. Can be arranged for superheater or any type stoker without radical change in design.



THE CASEY-HEDGES CO.

CHATTANOOGA, TENN.

CHICAGO, Marquette Bldg. NEW YORK, 39 Cortlandt St. NEW ORLEANS, 943 Balcony

THE BABCOCK & WILCOX COMPANY

85 Liberty Street, NEW YORK

BABCOCK & WILCOX—STIRLING—RUST

WATER TUBE STEAM BOILERS

STEAM SUPERHEATERS

Works:

MECHANICAL STOKERS

BAYONNE, N. J. BARBERTON, OHIO

BRANCH OFFICES

Atlanta.....Candler Building	Cleveland.....Guardian Building	New Orleans.....533 Baronne St.	Salt Lake City.....706-4 Kearns Bldg.
Boston.....49 Federal St.	Denver.....435 Seventeenth St.	Philadelphia.....North American Building	San Francisco.....Sheldon Bldg.
Chicago.....Marquette Building	Havana, Cuba.....Calle de Aguilar 104	Pittsburgh.....Farmers' Deposit Bank Building	Seattle.....Mutual Life Building
Cincinnati.....Traction Building	Los Angeles.....I. N. Van Nuys Bldg.		

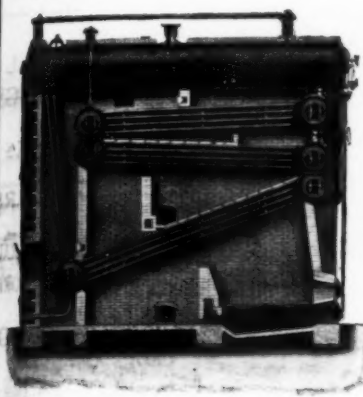
Without An Equal VOGT WATER TUBE BOILER

A real satisfactory and efficient steam producer. Complete combustion. Arrangement of tubes gives the water rapid circulation. Steam capacity greatly enhanced by the hot gases outside the tubes.

Many facts of interest to boiler users in our bulletin. Write for a copy now.

**HENRY VOGT
MACHINE CO.**

Incorporated
LOUISVILLE, KY.



At the Booth Factories every order gets prompt and efficient attention.

We carry huge quantities of felt in stock. If standard dies are required **we have them**. If special dies are needed **we make them**. Specialized equipment—under careful supervision brings each order through rapidly, economically, properly.

Try us on the basis of quality time and cost.

Booth Felt Co., Inc.

434-444 19th St., BROOKLYN, NEW YORK

740 Sherman Street
Cor. Park
CHICAGO, ILL.



"Sectional Water Tube Boiler
Specialists for Forty-
Eight Years"

ROOT Water Tube Boilers
Spiral Riveted Pipe

**ABENDROTH & ROOT
MANUFACTURING CO.**

Works: Newburgh, N. Y.
New York Office: Woolworth Building, 233 Broadway



HARTLEY BOILER WORKS
BUILDERS OF
HIGH GRADE **BOILERS**

Stand Pipe, Self-Supporting Stacks, Tanks, Towers, all kinds of Structural and Plate Iron Work, Boiler Fronts, Grate Bars, all kinds of Castings.
MONTGOMERY, ALA.

THE EDNA BRASS MFG. CO.

MANUFACTURERS OF

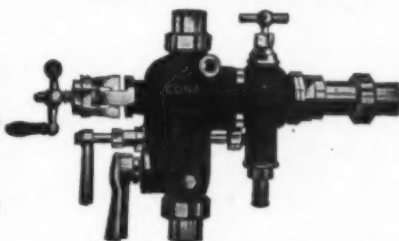
Injectors

Lubricators

Water Gages

Gage Cocks

Check Valves



Coal Sprinklers

Cylinder Cocks

Oil Cups

Boiler Checks

Whistles

**BRASS, BRONZE and COPPER CASTINGS
BUSHINGS, CAR BRASSES and ENGINE BEARINGS**

FACTORY
525-533 READING ROAD
CINCINNATI, O.

BRANCH OFFICE
551 McCORMICK BLDG.
CHICAGO, ILL.

FAIRBANKS BOILERS

Can Make Immediate Delivery On Scotch Marine

50-H. P.—60-H. P.—75-H. P.

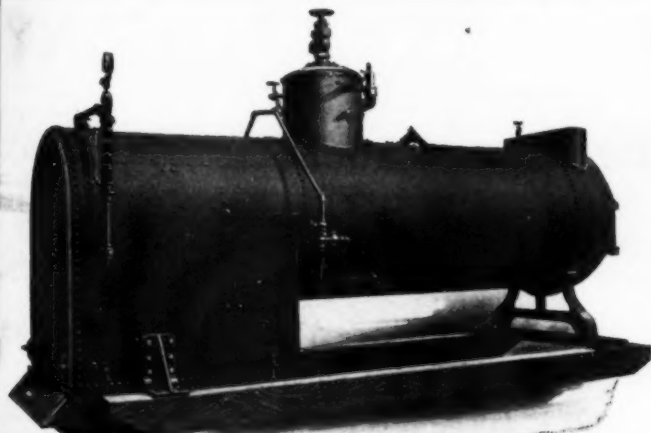
Firebox—50-P. H.—60-H. P.—75-H. P.

Several Second-hand Boilers In Good Condition

Also One 2½ yd. Fairbanks Steam Dredge with Wood Hull in Excellent Condition

Write For Full Particulars If Interested

THE FAIRBANKS STEAM SHOVEL CO.
Marion, Ohio



FIRE BRICK

AMERICAN
ENAMELED BRICK
& TILE COMPANY

Manufacturers of

Fire Brick

Highest Quality

Write or wire your requirements.
Prices and Samples submitted
upon request.
Prompt Shipments a specialty.

52 Vanderbilt Avenue
NEW YORK

(ESTABLISHED 1893)

Goldens' Foundry & Machine Co.

COLUMBUS, GEORGIA

MANUFACTURERS OF

MACHINE MOULDED PULLEYS
HANGERS SHAFTING

Couplings, Pillow Blocks, Floor Stands, Collars, Etc.

Send for Price List and Discount Sheet

THE BAILEY-LEBBY COMPANY

Selling Agents for
THE U. S. RUBBER COMPANY

Revere
Rubber Co.

Peerless
Rubber Co.

Mechanical
Rubber Co.

[Send for Catalogs Covering Complete Line

CHARLESTON, S. C.

MACHINERY and SUPPLIES

BELTING AND PACKING

TRANSMISSION and CONVEYING

SMITH-COURTNEY CO. - RICHMOND, VA.

"Mt. Savage" Fire Brick

BRANDS

"MT. SAVAGE"
"M. S. A."

"REFRACTO"
"CARBURETER"

Capacity 20,000,000 Per Year

Union Mining Co.

OFFICE AND WORKS
MT. SAVAGE, MD.

MACHINE TOOLS
TOOL GRINDERS
DRILL SPINDERS
STEAM HAMMERS
SAND MIXERS

William Sellers & Co. Incorp.

Philadelphia, Pa.

SHAFTS PULLEYS HANGERS COUPLINGS, ETC.

LOCOMOTIVE INJECTORS
VALVES STRAINERS
BOILER WASHERS
BOILER TESTERS
SAFETY SQUIRTS

STEVENS FIRE BRICK REFRACTORIES

Prepared Fire Clay
Fire Clay Flue Pipe

Sewer and Culvert Pipe
Chimney Tops
Well Tubing

Flue Lining
Fire Proofing

STEVENS BROS. & CO. Stevens Pottery GEORGIA

LOUISVILLE FIRE BRICK WORKS

INCORPORATED

HIGH-GRADE FIRE BRICKS

P. O. HIGHLAND PARK, KY.

VALK & MURDOCH CO.

MARINE AND STATIONARY BOILERS

Phosphate and Fertilizer Machinery—Sheet Iron Work—Iron and Brass Casting
East End of Calhoun Street CHARLESTON, SOUTH CAROLINA

THE LOOKOUT BOILER & MFG. COMPANY

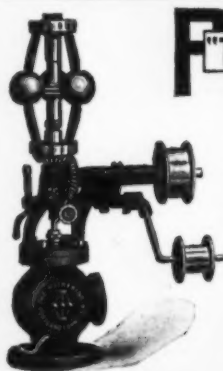
TANKS—FOR ALL PURPOSES—BOILERS
STACKS, TOWERS, STANDPIPES, STEEL PLATE & SHEET METAL WORK
CHATTANOOGA, TENN., U. S. A.

J. ROSS McNEAL, WALTER L. GRAHAM, CHAS. H. DENNY, L. A. DAUGHERTY
Pres. and Treas. Vice-President 2d Vice-President Secretary

Empire Machinery & Supply Corporation

36 Commercial Place, NORFOLK, VA.

Agents for N. Y. Belting & Packing Co., Detroit Oak Belting Co., Dodge Sales & Eng. Co., Link-Belt Co., Nyanza Roofing, Jno. A. Roebbing's Sons Co., Henry Disston & Sons, Simonds Mfg. Co., R. & J. Dick, Ltd., U. S. Graphite Co.'s Products.



"THE GOVERNOR WITHOUT JOINTS"

For Steam Engines, Gas Engines,
Turbines, Mechanical Control

Rugged and Reliable for Sawmill Duty. Close
in Regulation for Electric Light Service. Wide
Range Speed Changer
Automatic Safety Stop
Greatest in Efficiency and Durability under
continued and severe duty.

The PICKERING GOVERNOR COMPANY.
PORTLAND, CONNECTICUT, U.S.A.



DOMINION FLAX PACKING

Manufactured from long-line flax treated with a special water-and-oil-proof
lubricant. Recommended for elevator plungers, accumulators, brine, cold oil
pumps, cold water piston rods, valve rods and plungers.

DOMINION ASBESTOS AND RUBBER CORPORATION
154 Nassau Street, NEW YORK
BRANCHES: 67 Murray St., N. Y.; Philadelphia, Baltimore, Richmond

THESE BARS SAVED \$11,230.11 IN ONE YEAR



Bottom and End View of Bar Showing Structure.



Side View

READ THIS LETTER



SLOSS-SHEFFIELD STEEL & IRON CO.
Pig Iron, Coal and Coke

Address All Communications to the Company
Birmingham, Alabama

Thomas Grate Bar Co.,
Birmingham, Ala.

Dear Sirs—In reply to your inquiry as to the results we have obtained from the use of your bars, beg to advise, as you know, we have something like forty sets in use, and while we are very much pleased with them at all of our plants, our Sloss ore mines are so situated that we have been able to keep an accurate check on them, with the following results:

Cost to equip the plant....	\$2,300.00
Boiler efficiency increased..	47%
Labor decreased (approximately)	50%
Saving in mining ore, 3 2/10 cents per ton.....	
Saved in coal, at \$1.25 per ton, one year.....	11,230.11

We are well pleased as well as profited, and they are such an irresistible proposition that we are barring up all of our boilers with them.

Very truly yours,
J. C. MABEN, JR.,
Vice-President.

IRRESISTIBLE
CAN NOT AFFORD NOT TO USE THEM

THE SLOSS-SHEFFIELD STEEL & IRON CO.
Birmingham, Alabama

The letter reprinted herewith is proof of what the Thomas Grate Bars are doing for them. Are you helping to save the Nation's coal supply? Now is the time to economize.

THOMAS GRATE BARS

The COAL Saving Bars

THE BAR

Eliminates grate bar mishaps
Eliminates the cleaning period
Diffuses the air and increases combustion

Saves fuel
Increases steam
Costs less

THOMAS GRATE BARS

Put your plant on an efficiency basis.

Conserve coal and eliminate delays from shut-downs, thereby helping the Government.

If You Have Grate Troubles

PUT IT UP TO

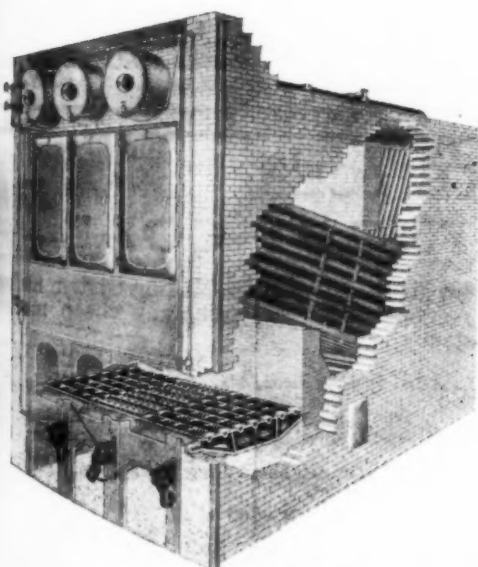
THOMAS GRATE BAR CO.
BIRMINGHAM, ALA.

BRANCH OFFICES:

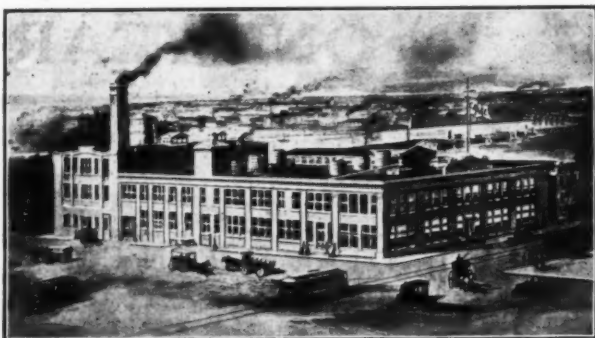
CHICAGO, ILL.
RAILWAY EXCHANGE BUILDING

CLEVELAND, OHIO
HIPPODROME BUILDING

NEW YORK
50 BROAD STREET



WATER TUBE BOILERS



Crane Ice Cream Co., Philadelphia, Pa.
1-150-ton Vogt Exhaust Steam Refrigerating Machines.

Ice Cream Refrigeration

Vogt Exhaust Steam Refrigerating Machines are best adapted for ice cream plants because they maintain any desired temperature with practically no additional cost for fuel or power.

The number of repeat orders from Ice Cream plants demonstrates the efficiency of the Vogt Absorption Machine.

Henry Vogt Machine Co.
Louisville, Ky.

Manufacturers of

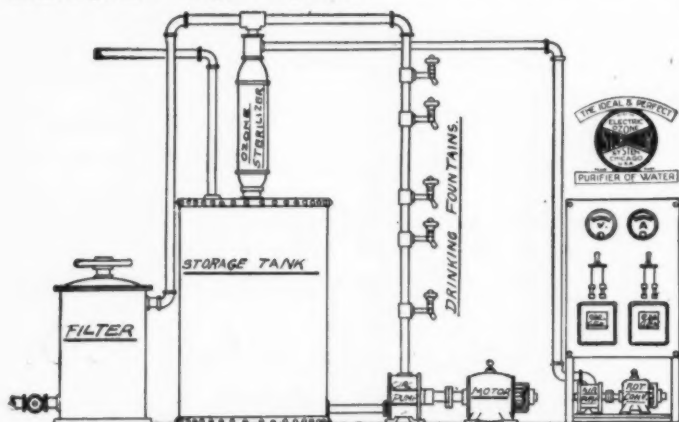
Ice and Refrigerating Machines, Water Tube and Tubular Boilers, Steel Casings for Boilers, Shaking Grates and Drop Forged Fittings.

PURE DRINKING WATER

used for the past five years by the 2,000 Officials and Employees of the Chicago office of the C. B. & Q. Ry. Co., has been supplied at a cost of only one cent for each 800 to 1000 gallons purified by an

Electric Ozone Sterilizer System

which destroys and literally consumes and removes from the water the harmful germs and organic impurities.



Typical layout of a circulating system. One of the several types we make.

We can furnish a system to meet your drinking water requirements. If you have a filtering plant, or a circulating and cooling system, our system can be attached. If you buy bottled water, we can save you money—if any quantity, 50% or more.

We furnish systems for Hospitals, Clubs, Apartment and Office Buildings, Schools, Institutions, Factories, Offices, Swimming Pools and Municipalities.

Responsible Representatives Wanted.

Electric Ozone Sterilizer Co.

312 S. Dearborn St.

CHICAGO, ILL.



TO GIVE YOUR CLIENTS
PURE WATER
Use

Roberts Filters

COMPLETE LINE SHOWN IN
SWEET'S CATALOGUE,
PAGES 1414-1415

Catalogue Mailed on Request

Be Sure of the Address

Roberts Filter Mfg. Co.
1707 Flatiron Building, New York
Factory, DARBY, Near PHILA., PA.

FILTERS WATER PURIFICATION SOFTENERS
INTERNATIONAL FILTER CO.
40 South Dearborn St.—CHICAGO—Woolworth Bldg., N.Y.

PURE WATER

A Water Softener that is mechanically correct. Our system provides for pure water for boiler feed and for all industrial purposes. Write for circular and special detailed information.

RICHMOND WATER SOFTENER CO. Richmond, Ind.

PITTSBURG FILTERS

PURIFY WATER FOR ALL PURPOSES

WRITE FOR CATALOG

PITTSBURGH FILTER MFG. CO.

KANSAS CITY, MO.

PITTSBURGH, PA.

WATER WE-FU-GO AND SCAIFE
PURIFICATION SYSTEMS
SOFTENING & FILTRATION
FOR BOILER FEED AND
ALL INDUSTRIAL USES
WM. B. SCAIFE & SONS CO. PITTSBURGH, PA.

HAVE YOUR

Refrigerator built and your Refrigerating Machinery installed by the firm who can do both jobs.

—and thus centralize responsibility and cut costs. We have a few ice machines in stock for immediate installation. Consultation without obligation.

Ottensheimer Bros.
Refrigerator Specialists

Sanitary Sectional Refrigerators, Insulated Cold-storage Rooms, Refrigerating Machinery and Ammonia Fittings, Packing-house Apparatus and Supplies.

413-15 N. Howard St., Baltimore

HENRY A. KRIES & SONS CO.

Steam and Mill Supplies, Pipe Fittings, Complete Power Plant Equipment, Manufacturers and Machinists

6 and 8 W. Lombard St., BALTIMORE, MD.

OIL ENGINES

of all makes and types
New and Rebuilt

GAS, GASOLINE AND KEROSENE ENGINES STEAM ENGINES AND BOILERS, MOTORS, GENERATORS AND COMPRESSORS

UNITED MACHINE WORKS
55-57 W. 3rd St. New York City

MAKE ICE WITHOUT COAL—

The Arctic-Pownall Raw Water Ice-Making System makes pure, palatable, crystal clear ice, using any cheap motive power. For instance

		TONS ICE	POWER
Polar Ice & Coal Co.,	Anniston, Ala.	50	Electricity
Mission Ice Co.,	San Antonio, Tex.	50	"
Pius Sinz,	Dallas, Tex.	15	Gas Engine
Centennial Ice Co.,	Birmingham, Ala.	40	Electricity

are just a few of your neighbors using this system.

It will pay you to write us.

The Arctic Ice Machine Co.

Home Office and Plant
CANTON, OHIO

Southern Office
O. J. MORRIS, Grand Hotel Bldg., Cincinnati, Ohio



SUPREME AUTO OIL

is Manufactured from Southern Asphalt Base Crude—
under the supervision of the most skilled chemists.
It leaves less carbon as it contains no paraffine to
gum and stick.
Get it from your Dealer—Look for the Sign of the
Orange Disc.

There is More Power in
THAT GOOD GULF GASOLINE and
SUPREME AUTO OIL

GULF REFINING COMPANY
The Largest Independent Refining Company in the World.

ROBINSON OILS

"they lubricate more and outlast other oils"

WM. C. ROBINSON & SON CO.

ESTABLISHED 1832

Main Office: BALTIMORE, MD. Refinery: CORAOPOLIS, PA.

BRANCHES IN 20 CITIES

LOMBARD IRON WORKS & SUPPLY CO.
AUGUSTA, GA.

Machinery - Supplies - Repairs - Castings

Proposals advertised in the Manufacturers Record bring good results.

COSDEN & COMPANY TULSA OKLAHOMA

Manufacturers and Distillers
OF

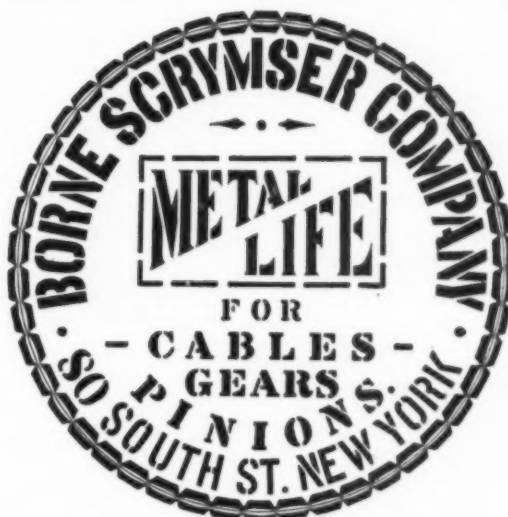
HIGH GRADE

GASOLINE-NAPTHAS

Lubricating and Illuminating Oils

Unexcelled Producing, Refining, Transporting Facilities

You Pay
High Metal Cost
So Why Not Get
Real Metal Life



We are now Protecting the
**Largest Gear Sets
Operating**
BORNE, SCRYMSER COMPANY
80 SOUTH ST., N. Y.

ALBANY GREASE

**Use Albany Grease in Any
Kind of Grease Cup**

It makes little difference whether the grease cup
you use Albany Grease in is a spindle, a compres-
sion cup or an air cup, a brass or steel or a tin cup,
a small or a large cup. Neither does the type or
the size of a bearing or the speed of the shaft pre-
vent the use of Albany Grease. If you are not
using Albany Grease now, send for samples and
try it.

ALBANY LUBRICATING COMPANY
Adam Cook's Sons, Props.
708-10 Washington Street, New York
Established 1866



*The best belting to buy
for particular service
is the kind that meets
most conditions suc-
cessfully.*

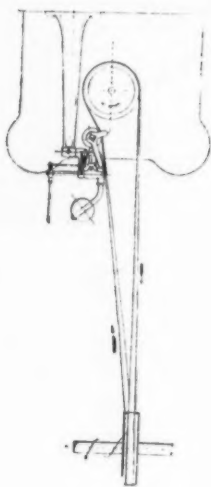


DUXBAK Leather Belting

is the most widely used brand of leather belt-
ing in the world—because it is made for all
kinds of service under all sorts of conditions
—everywhere.

DUXBAK successfully resists the effects of
water, steam, machinery oils and acid fumes,
and it does not dry out during idle periods
nor open at the joints in wet weather.

Make your next order read: "Schieren's
DUXBAK."

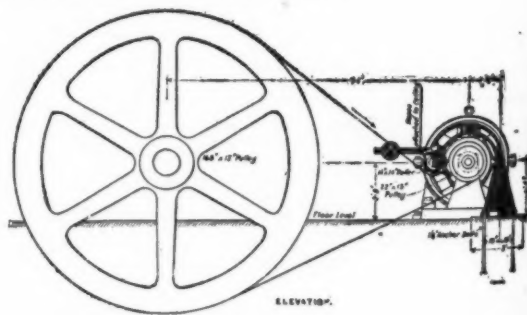
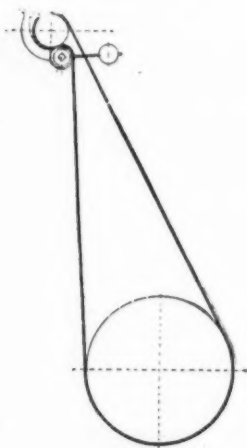


Chas. A. Schieren Company
ESTABLISHED 1888
TANNERS
BELT MANUFACTURERS

Main Office and Factory: 26 FERRY ST., NEW YORK
Oak Leather Tanneries: Bristol, Tenn.

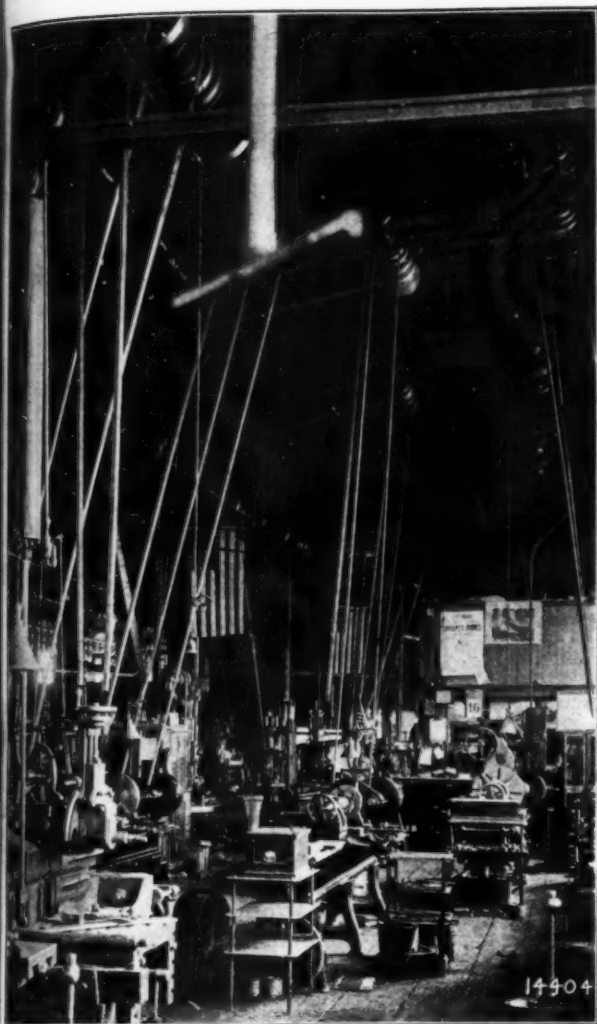
BRANCHES and STOCKROOMS LOCATED
in ATLANTA, BOSTON, CHICAGO, CLEVELAND,
DALLAS, DENVER, DETROIT, KANSAS CITY,
MEMPHIS, PHILADELPHIA, PITTSBURGH,
SALT LAKE CITY, SAN FRANCISCO, SEATTLE,
ST. LOUIS.

Write Nearest for Information



Leviathan and Anaconda Belts

FOR POWER TRANSMISSION, CONVEYING AND ELEVATING



Do You Buy Belts for What They Are Made of or for What They Will Do?

The photograph shows a small corner in a large railroad shop. Eight men out of ten familiar with this type of work would gamble that all the belts are leather.

"Nothing but leather will stand fluctuating loads," says one. "Leather and leather alone can be used on cone pulleys," says another. "I know that leather is the only thing that will stand up in contact with shifters," says a third.

Yet these belts are *not* leather. They are Leviathan-Anaconda.

In this shop heavy duty 20-inch lathes involving, of course, cone pulleys with the smallest cone 8 inches in diameter, are equipped with 3"x6-ply Anaconda where formerly double leather cost more money and gave less service.

The counter shaft drives are 4"x6-ply Anaconda—instead of double leather—and are frequently shifted from loose to tight pulleys and back again. In no case has edge wear resulted. These and the lathe belts have all been in service more than two years.

On a 30" upright drill press 3½"x6-ply Leviathan is used. It has been on the job for seven years.

Not one of these belts was bought for what it was made of. They were all bought for what they would do—and they did it.

Leviathan-Anaconda belts should not be used on pulleys of too small diameter—neither should they be against shifters with knifelike edges, but they *can* be used where pulleys are large enough for the ply needed to pull the load and where shifter conditions are moderately decent, and at a saving to you.

Why not forget, then, that they are made of canvas and buy them for what they will do?

The coupon offers an easy road to a trial.

MAIN BELTING CO., Atlanta
Leviathan and Anaconda Belts

For Transmission, Conveying and Elevating

Factory and Headquarters: PHILADELPHIA

BRANCHES: New York Boston Chicago Pittsburgh San Francisco

TEAR OFF AND MAIL TO —

MAIN BELTING CO.,
Atlanta

Gentlemen:

We need a Belt for the following drive: send us your recommendation.

BEST BELT TO MEET FOLLOWING CONDITIONS:

Size of Belt—length.....	Tight side of belt is on top.....
width.....ply.....	is on bottom.....
Distance between centres of pulleys is.....	Belt is crossed.....
Diameter Driving Pulley is.....	Belt is a quarter turn.....
Diameter Driven Pulley is.....	Belt is not run with an idler.....
Width of face of Pulley is.....	Belt is ^{best.} subject to moisture, gas, oil.....
H. P. required is.....	Belt drives a.....
Number of revolutions of Driving Pulley is.....	
Name.....	Address.....

A Double Service Belt

Most good belts are built so as to have either fine pulley-gripping surface and less ruggedness, or plenty of ruggedness and less traction.

Spar Oak, one of Graton & Knight Standardized Series Leather Belts, is a unique belt because it has super-gripping power and the firmness that resists the mauling of hard usage.

The side of Spar Oak next to the pulley is Graton & Knight Spartan—the belting leather with the highest coefficient of friction ever attained in any belting material; the outside is the finest quality of Graton & Knight special oak tanned, extra firm center stock. Combined, they form a belt of absolutely unique quality.

The side of Spar Oak next the pulley is Spartan leather, giving the maximum grip on the pulley.



The outer part of Spar Oak is firm, heavy selected, special oak tanned center stock.

Spar Oak Belting

Spar Oak stands high speeds without slipping or burning. It stays flat under strain. The punching of shifters and rapping of pulley flanges affect Spar Oak surprisingly little. Spar Oak belts in actual use carry their traction power up to speeds of more than a mile a minute. In the hard test of "mule spinning," Spar Oak has set new standards of what belting efficiency is.

If you have a vexatious belting problem, tell us about it and let us tell you whether or not Spar Oak is the belt required. There are thousands of cantankerous drives in the United States that will lose much of their crankiness when operated by Spar Oak. If you have such a one, it is well worth your while to write us about it.

Write for information about Standardization as applied to Belting.

THE GRATON & KNIGHT MFG. CO.
WORCESTER, MASS., U. S. A.

*Oak Leather Tanners, Makers of Leather Belting, Lace Leather, Packings and Specialties
Branches and Distributors in all Principal Cities*

GRATON & KNIGHT

Standardized Series



LEATHER BELTING



Tanned by us for belting use

THE GRIP OF POWER

Performing efficiently, consistently and silently from gigantic power centers



holds the mightiest industries firmly in a tremendous "grip of power."

The highly frictioned and uniform surface of Pacemaker Belting grips the pulley evenly from edge to edge with greater power than is possible in old-style leather beltings that depend largely upon their tightness for transmission value.

Pacemaker increases output, saves power, avoids frequent shutdowns and shows a profit wherever used.

It is pliable, uniform in tensile strength, impervious to climatic conditions, requires no attention and is wearproof.

Use **LIGHT PACEMAKER** for small pulleys and highest speeds.

Use **HEAVY PACEMAKER** for unusual conditions on heavy, hard drives.

Send for catalog and samples.

The Cincinnati Rubber Mfg. Co.

Beltings—Packings—Hose—Molded Specialties.

CINCINNATI, OHIO, U. S. A.

PURE
OAK
TANNED

FOR

Leather Belting

ACID
WATER
STEAM
PROOF

THE DRUID OAK BELTING COMPANY

(INC.)

BALTIMORE, MD.



Beware of the Slacker Belt!

In these war-times we have found a type of man who claims every patriotic virtue, yet tries to dodge every responsibility.

In the language of the street, he's a slacker. You'll find slackers in the transmission equipment family, too.

Sometimes they masquerade under the good name of **Gandy**—at other times they get past on the "just as good as Gandy" dodge.

But a slacker belt won't stand up any longer than a human slacker—neither can it save the pace.

Gandy is always on the job ready for any service or emergency that may arise and he always flies the colors of his own trade-mark.

Write for list of **Gandy** stock and old size belt ready for immediate shipment.

Look for the Green Edge and **Gandy** Trade-mark.

"On-the-Job" Gandy, Service Manager.

On-the-Job GANDY

The Gandy Belting Company

738 West Pratt Street

Baltimore, Md.

New York Branch: 30 Warren Street



A Slipping Belt Is a Lazy Belt

Lazy belts and lazy men put a drag on production; they are misfits in a well-managed plant. Neither should be tolerated, for their moral effect on efficient operators is bad. Belt slippage is preventable.

DIXON'S SOLID BELT DRESSING

does the trick, and it is absolutely harmless to the belt itself—whether of leather, rubber or fabric.

Ask for Booklet 80-O and free sample.

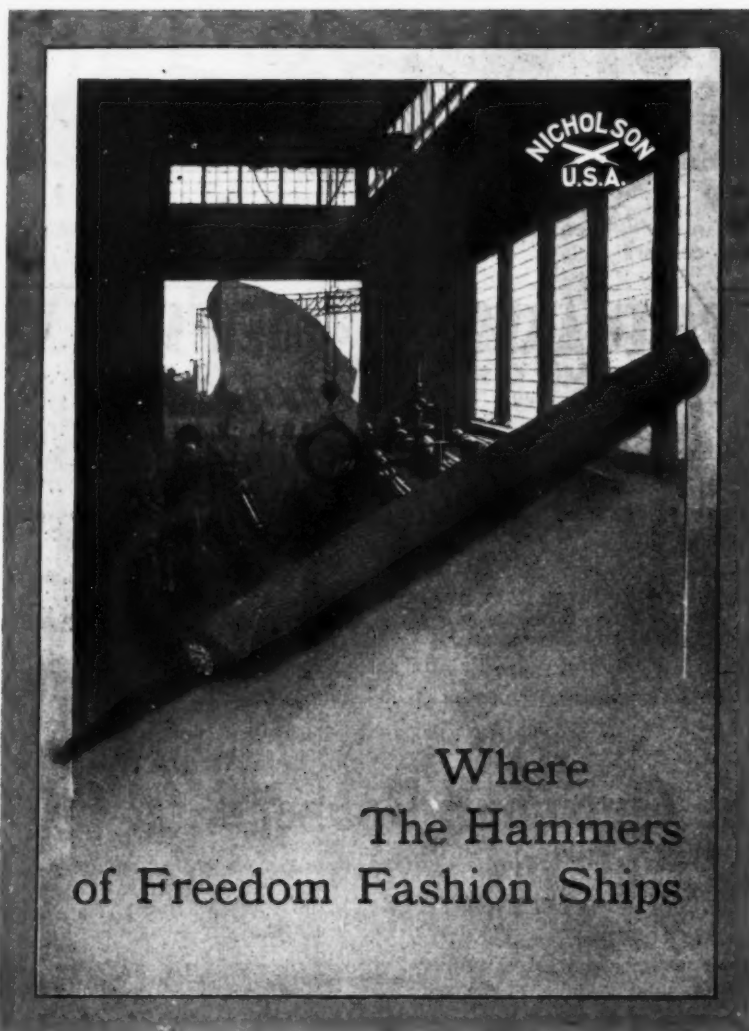
Made in JERSEY CITY, N. J., by the

JOSEPH DIXON CRUCIBLE COMPANY



ESTABLISHED 1827





Where
The Hammers
of Freedom Fashion Ships

There you'll find NICHOLSON FILES doing essential work. Ponderous machinery works smoothly—it was fitted accurately with NICHOLSON FILES. On the Ship, the small but unavoidable imperfections of fit and finish are rapidly adjusted by

Nicholson Files

the file that CUTS the FASTEST and smoothest. Great ship builders use NICHOLSON FILES because their expert machinists demand them. A distinctive type for every use.

Nicholson File Co.
PROVIDENCE, R. I., U. S. A.



AWARDED American Steel & Wire Company's

American Flat Wire

FLAT COLD ROLLED STEEL

Awarded the Grand Prize at the Panama-Pacific Exposition

MADE in all widths up to 9 inches, for shaping into all forms of manufacture in automatic machines or otherwise, such as butts, hinges, tubes, roller skates, keys, typewriter parts, sewing and adding machine and automobile parts, cream separator discs, buttons, stove and show case trimmings, gun parts, wire chair rims, go-cart parts, and any difficult or plain forming where flat steel of great ductility, strength, finish and uniformity is required.

"Flat Wire Bulletin", describing many uses of flat wire, sent free upon request.

American Steel & Wire Company

Chicago New York Cleveland Pittsburgh Worcester Denver

Export Representative: U. S. Steel Products Co., New York

Pacific Coast Representative: U. S. Steel Products Co.,

San Francisco Los Angeles Portland Seattle



Western Tool & Mfg. Co.
Springfield, O.

We make a large
line of shop furniture

Here's a Time and Money
Saver for Shops

Our Portable Tool Stand

Carries any load. Easily moved anywhere. Let your work stay where it is, and take your tools, vise and bench to it. This is the modern way.

Starrett Calipers

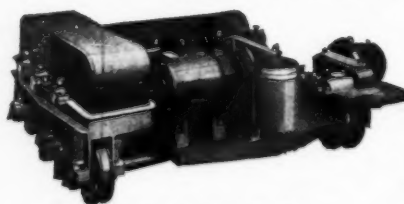
The precision workman insists on Starrett Tools, for he realizes that no job can be right unless his fine tools are of unquestioned accuracy. Catalog No. 21 EC, showing 2100 tools and hack saws, sent free on request.

THE L. S. STARRETT CO.
World's Greatest
Toolmakers
Manufacturers of
HACK SAW Unexcelled
ATHOL, MASS.
42-799



WHITING CRANES

All Types for Every Service



Type "E" Electric Crane Trolley
All gears totally enclosed, running in oil.

Complete Foundry Plants

Designed, equipped and started
in operation.

Handpower, Pneumatic
and Electric

Capacities: 1 to 250 tons


Write for catalog 130

WHITING
FOUNDRY EQUIPMENT CO.
HARVEY-ILL. U.S.A.
CHICAGO, ILL.

Belt Assurance.
"BALTOBELT"

The Twentieth Century achievement in Leather Belt Making.
 A product of honest, old-fashioned oak tanned Leather and skilled workmanship, perfected by many years of careful labor and study. Send for booklet and prices.

BALTIMORE BELTING COMPANY,
 Leather Belt Makers, Baltimore, Md., U. S. A.





Chesapeake

STANDARD CANVAS BELTING

Full Particulars Gladly on Request

THE CHESAPEAKE BELTING CO. BALTIMORE, MD.



CRESSON-MORRIS CO.

POWER TRANSMITTING MACHINERY

We make a complete line of Power Transmitting Machinery, Shafting, Rope Transmission, Machine Moulded and Cut Iron and Steel Gears for heavy service.

CRESSON-MORRIS CO. Philadelphia, Pa.

Gray Artesian Well Co.

Specialty Well Drilling


American Bank Bldg. Pensacola, Fla.

SAND FOR CONCRETE

Washed and Screened. Equipped to fill large orders. Prompt Service.

MACON FUEL & SUPPLY CO.
 MACON, GA.

Agents Standard Portland Cement.



Tent and Awning Makers are Critical Buyers

The very nature of their product makes it imperative that only the best of rope be used. Otherwise their tents and awnings will not successfully withstand the constant strains and severe abuse to which they are subjected.

The fact that

COLUMBIAN MANILA ROPE

is the choice of many of the largest tent and awning manufacturers offers convincing proof of its superiority. When you are in the market for rope, where quality is of the utmost importance, select "Columbian" and in this way secure lasting satisfaction.

COLUMBIAN ROPE COMPANY

Auburn, New York, "The Cordage City" Branches: New York Boston Chicago

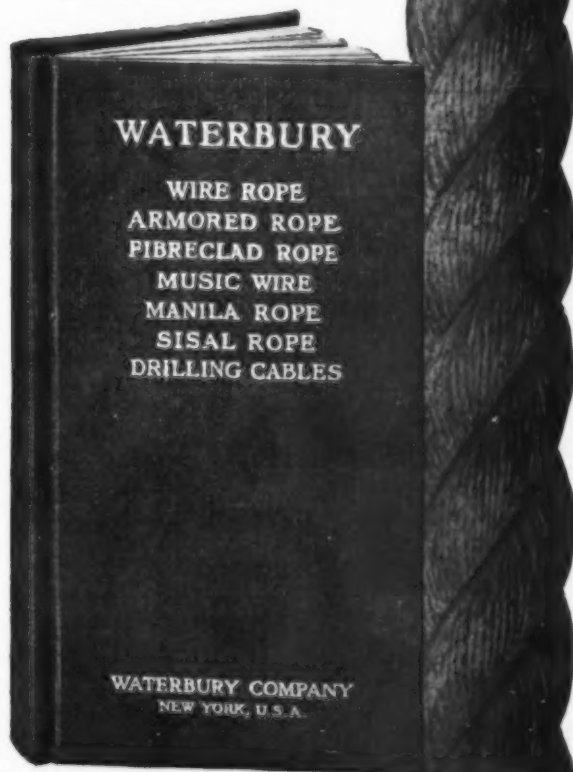
WATERBURY CORDAGE

The word "Cordage" is used in a comprehensive sense to include all sizes and varieties of the article from binder twine to a cable 15 inches in circumference. With this definition in mind you can appreciate the significance in the fact that we manufacture a complete line of Cordage products, which since 1816 have been known for their unvarying high quality and splendid service.

Millions of feet of Waterbury Cordage both Manila and Sisal, have been sold for industrial uses and thousands of buyers will have no other.

CATALOG

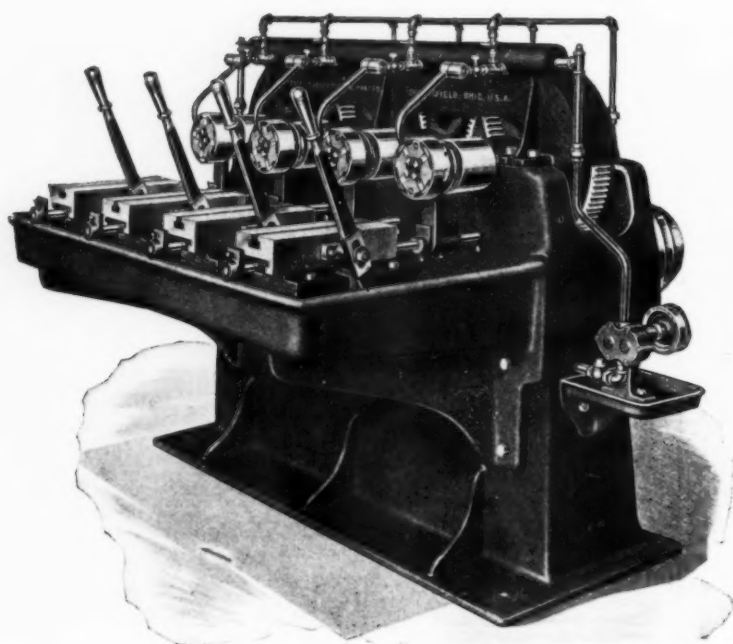
A 220-Page Cloth Bound Rope Manual covering all kinds of rope—Fibre, Wire, Fibreclad Wire and Armored Wire—will be mailed free upon request.



WATERBURY COMPANY
63 PARK ROW, NEW YORK

CHICAGO	1315-1321 W. Congress St.
SAN FRANCISCO	151-161 Main St.
DALLAS, TEXAS	A. T. Powell & Co.
NEW ORLEANS	1018 Maison Blanche Building

Accurate Screws In Quantities



The 4-spindle machine shown has a capacity of 9,000 accurate $\frac{5}{8}$ " threads $1\frac{1}{2}$ " long in a 10 hour day. Other sizes can be made in proportion.

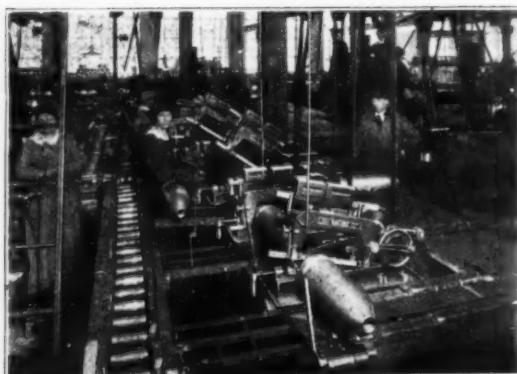
"W. & P." Threaders

are being used by many manufacturers in this line who have won a reputation for the accuracy of their product. You can thread cap and set screws on the "W. & P." quickly and as accurately as possibly with large output. You ought to investigate this machine. Let us know the nature of your screw requirements. Send for a copy of our new catalog describing this and other sizes of Bolt Pointing, Threading and Special Tapping Machines.

Ask for Bulletin A

THE WEBSTER & PERKSTOOL CO., Springfield, Ohio

P. O. Box 1600



Installation showing
"RACINE" High Speed Metal Cutting Machines
cutting shell ends

For Greater Speed and Greater Accuracy

USE THE

"Racine" High Speed Metal Cutting Machine

a compact machine that

**SAVES TIME
SAVES LABOR
SAVES BLADES
SAVES MATERIAL**

Made in twenty-two different types. Tell us the size stock you are cutting and we will quote you on a machine suited to your work.

Ask for our Catalog MR-22

RACINE TOOL & MACHINE COMPANY

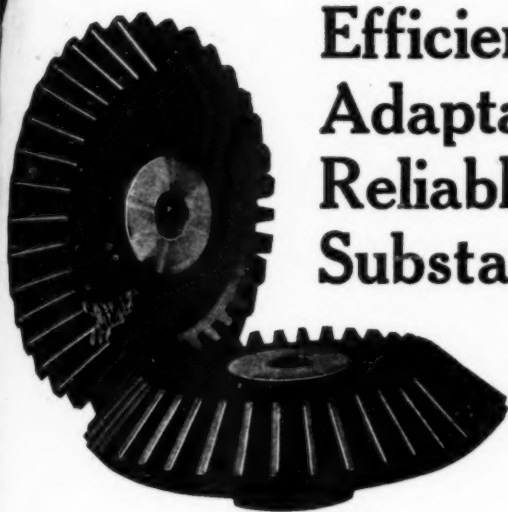
RACINE, WISCONSIN, U. S. A.

Use "RACINE" H-S Tungsten Power Blades

MEDART

GEARS

Efficient
Adaptable
Reliable
Substantial



OUR corporate name indicates: "Specialists in Pulleys only!" We want you to know and act upon it that we've been specialists for years in Gears as well as Pulleys—and everything in Mechanical Power Transmission Machinery.

Gears!—of any sort—whether Spur, Bevel, Mitre, Worm, Mortise—whether pattern moulded, machine moulded or cut—you can get them from "Medart." Gears? Of any material—Cast Iron, Semi-Steel, Steel.

Gears! We make CUT Gears up to 72-inch diameter, inclusive—either of cast iron, semi-steel, cast steel or steel forging. We are equipped to handle an order for several thousands or for only a few of them at a time.

Gears! We build every description of MACHINE MOULDED Gears. All gear teeth in our machine molded gears are molded from a single tooth block (pattern of but one tooth). As this block is mechanically spaced about the rim circle, the teeth are molded, one at a time, all are alike, and the pitch is accurate. This positively insures gears having constant regular motion and makes them highly efficient.

Gears! We have hundreds of gear patterns that are not listed in our No. 26 Catalog. We make CAST Gears—either of iron, semi-steel or steel. And our line of gear patterns—comprising thousands—is exceptionally comprehensive in range, and includes everything in gearing to meet all but extraordinary requirements, and also represents the very best obtainable knowledge and skill in construction.

Attractive Prices

Steady Service

Send for our General Catalog No. 26 and Supplement No. 1A, if you haven't these editions on file. For discounts applying to List Prices covering our appliances, refer to Discount Schedule, now in your possession, or, if you fail to locate same, we will be pleased to send a copy on receipt of your request.

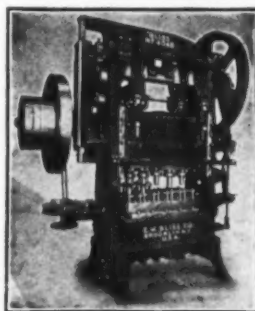
MEDART PATENT PULLEY COMPANY

Manufacturers for 40 Years of the most Complete Line of Power Transmission Equipment

WORKS: ST. LOUIS, MISSOURI

Cincinnati : Chicago : Philadelphia

Sheet Metal Working Machinery



Bliss Double Crank Toggle Drawing Press arranged with friction dial and lateral feeds. Adapted for the economical manufacture of such articles as lamp and lantern bodies, lamp founts, drinking cups, oil can bodies or similar work requiring a series of operations. Five operations are performed simultaneously at each stroke. Intermediate handling and danger to operator is eliminated.

There is a Bliss machine for every sheet-metal-working requirement. Write us your particular requirements.

E. W. BLISS CO., 4 Adams Street
BROOKLYN, N. Y.
Chicago Office: 1821 Peoples Gas Bldg. Detroit Office: Dime Bank Building
Cleveland Office: Union Bank Building



BLACK DIAMOND FILE WORKS

Twelve Medals Awarded at International Expositions.

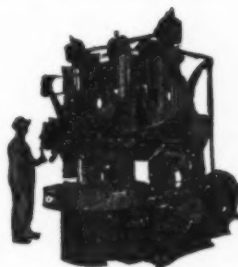
Special Prize Gold Medal Atlanta 1895.

Our goods are on sale in every leading hardware store in the United States and Canada. Copy of Catalogue will be sent free to any interested file user on application.

G. & H. BARNETT COMPANY
PHILADELPHIA, PA.

Owned and Operated by NICHOLSON FILE CO.

Machine Tools



We build a most comprehensive line of machine tools for every imaginable purpose, also Steam Hammers and Niles Electric Traveling Cranes.

Write for Descriptive Circulars

Niles-Bement-Pond Co.

111 Broadway, NEW YORK

Birmingham, Ala., Office—2015 First Ave.

Philadelphia Office—405 North 21st St.

BEAUDRY HAMMERS

Belt or Motor Driven 25 to 500 lb. Rams
For General Forging

Simple, Powerful, Durable

Send for Catalogue

Beaudry & Co., Inc.

Oliver Bldg., Boston, Mass

Sales Agents:

The English Tool & Supply Co., Kansas City, Mo.
Sherritt & Storr Co., Philadelphia, Pa.
The Machine Tool Engineering Co., Inc., New York City.
Brown & Zortman Machinery Co., Pittsburgh, Pa.
The E. L. Essley Machinery Co., Chicago, Ill.; Milwaukee, Wis.
Eccles & Smith Co., San Francisco, Los Angeles, Cal.
Alfred Herbert, Ltd., Coventry, Eng.; London, Paris, Calcutta, Yokohama.
Hallidie Machinery Co., Inc., Seattle, Wash.
The Portland Machinery Co., Portland, Ore.
W. M. Pattison Supply Co., Cleveland, Ohio.



W. B. WOOD
SONS CO.

Power Transmitting Machinery

Modern and Approved Appliances
for the Complete Equipment of any
Manufacturing Industry.



SIXTY YEARS ago this business was established with certain clearly defined policies determined upon.

- I. To specialize in and manufacture one particular line—Power Transmitting Machinery.
- II. To establish and hold a reputation for quality of product.
- III. To create and maintain a service so comprehensive as to include the benefit of our actual and practical experience.

SPECIALIZATION.—Working entirely upon one line enabled our whole organization to concentrate its thought and effort solely upon transmission problems. Consequently, our product is recognized today, not alone for its high quality, but also for adaptability and dependability—the successful result of sixty years of specialized effort and experience.

REPUTATION.—To have started a special line of business and continued in the same line for more than half a century can mean only that the product has a high reputation.

SERVICE.—The service which we created and which we constantly maintain does not stop with prompt delivery. This is an important factor and is by no means overlooked by our organization. But our service means more. It means the bringing to your assistance our experience of many years, the giving of a careful analysis of your transmission requirements and advising the best means of delivering maximum amount of developed power with minimum frictional loss.

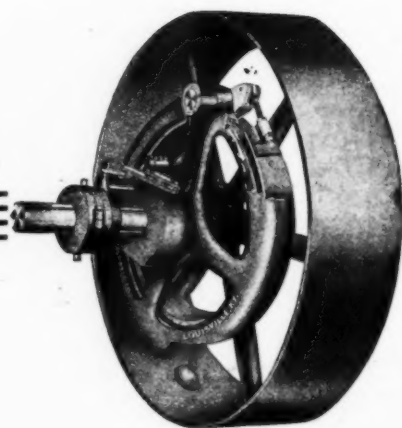
Our organization comprehends all features of the business, and we shall be glad of an opportunity to assist you in solving your transmission problems.

Whether for a single item or a complete equipment, specify "Wood's"

T. B. Wood's Sons Co.
CHAMBERSBURG, PA.



Manufacturers of the largest and most complete line of Power Transmitting Machinery made by any one manufacturer.



Easy and Safe to Operate

The Caldwell Friction Clutch works on the same principle as your automobile brake—a flexible band lined with Raybestos and tightened with a lever.

The lever is moved by a toggle link which gives increased power as the stress increases and the brake band grips the entire circumference of the friction ring, thus giving greater pulling power.

The whole clutch is simple and compact, built on correct mechanical principles, and easy and safe to operate.

Send for Catalogue

W. E. CALDWELL CO.

INCORPORATED

270 E. Brandeis Street
LOUISVILLE, KY.

Caldwell
FRICTION
CLUTCHES



AMERICAN STEEL SPLIT PULLEYS

Arms cut the air
Minimum belt slip
Easily applied
Reliable
Interchangeable bushings
Carried by dealers
Avoids keyways and set screws
National distribution

The American Pulley Company
PHILADELPHIA, PA.



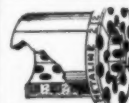
"Simplex" CHAIN HOISTS

require a minimum amount of power to hoist a load, have an automatic brake, and last, but not least, have

Two Speeds
Cranes
Tramways

Catalog Free

J. G. SPEIDEL
READING, PA.



METALINE

(Trade Mark Reg.)
Most Reliable, Positively
Least Wearing, No Fire
BUSHINGS for LOOSE
THE METALINE
COMPANY

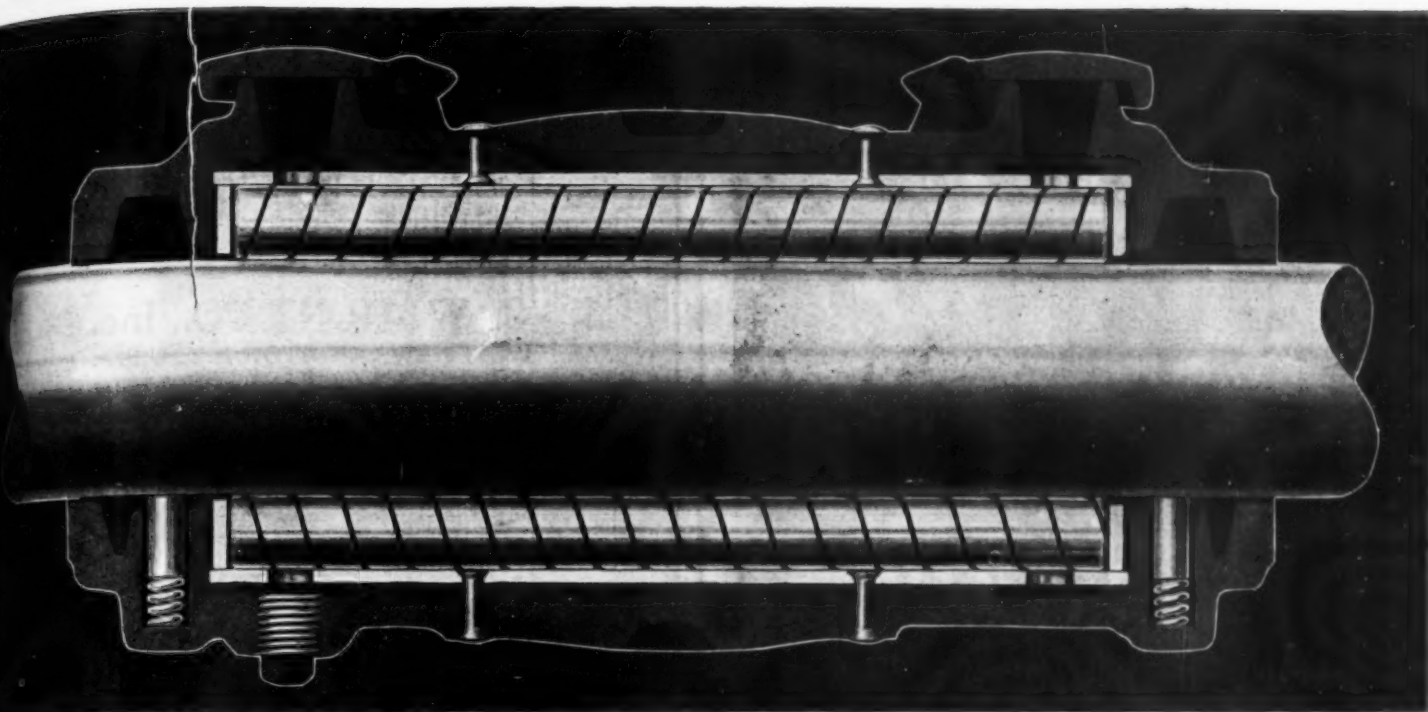
Divided Flanged Bushing
Corporate name changed from North American Metal
West Ave., Cor. 3rd St., Long Island City, N.Y.

Impervious Face Brick

"Ratine" "Cravenston"
Common Building Brick
W. E. Dunwoody, President
STANDARD BRICK COMPANY
Macon, Ga.

IF YOU WANT

To get in touch with some Extra Contract Work
ADVERTISE IN THE
Southern Shops Seeking Contract Work
Department
RATES ON APPLICATION
Manufacturers Record Baltimore, Md.



WHY HYATT LINE SHAFT ROLLER BEARINGS ARE STANDARD EQUIPMENT

Because they combine the advantages of low cost and ease of installation, Hyatt Line Shaft Roller Bearings are now standard equipment in hundreds of large plants using improved transmission equipment.

Despite their savings of power and lubricant, Hyatt Line Shaft Roller Bearings cost but a trifle more than old-fashioned, power-wasting babbitted bearings.

It is not necessary to apply an inner race to the shaft when Hyatt Bearings are used—the self

lubricating rollers produce a true rolling motion between the shaft and the steel lining of the box. A Hyatt Bearing is completely split and so can be quickly slipped onto the shaft in the hangers without disturbing belts, collars, pulleys or couplings.

Ask for an alternate bid on Hyatt Line Shaft Roller Bearings, compare the bids, you will buy Hyatt equipment.

Our Transmission Bulletin will be of interest to you. Send for it.

HYATT ROLLER BEARING CO.

Metropolitan Tower, New York

Manufacturers of Bearings for Mine Cars, Ore Cars, Steel Mill Cars, Roller Tables, Trolleys, Cranes, Hoists, Machine Tools, Shafts, Countershafts, Concrete Machinery, Textile Machinery, Conveyors, Lift Trucks, Industrial Trucks, Railway Service Cars, Storage Battery Locomotives, etc.

A-133

Hyatt Bearings for Line Shafts



Saves Cost of Eight Men and 14 Hours Daily

Washing and oiling three million screw parts daily, as they come from machines, presented a problem in economical handling which only a most perfectly constructed and carefully designed conveying system could solve. That's why the National-Acme Mfg. Co., guided by a most thorough investigation and assisted by our corps of engineers, finally equipped their Cleveland plant with

Conveyors

This typical installation reduced the cost of delivering these parts to the packing department by a sum equal to the wages of eight men and the value of 14 hours' time daily. It drives home the importance of an equally practical solution to your handling problem; is indicative of like improvement over your present methods if you but capitalize our experience and co-operation into a thorough understanding of the economy which you can effect. A. F. Conveyors are today operating in hundreds of plants at a saving equal to many times their initial cost.

Request a copy of Catalog No. 51, explaining in detail the operation of the National-Acme installation

THE ALVEY-FERGUSON CO., INC.
CINCINNATI, OHIO



THE cost of handling material around your plant—Does it make a perceptible dent in your profits—Then write

C. W. HUNT CO., Inc.
WEST NEW BRIGHTON, N. Y., U. S. A.

501 Fifth Ave., N. Y. City. Fisher Bldg., Chicago, Ill.
710 14th St. N. W., Washington, D. C.

Tell them your problem—and ask for *any* or *all* of the following catalogues:

Coal Handling Machinery.
Dumping Tubs and Grab Buckets.
Automatic Railways.
Cable Railways.
Noiseless Pivoted Bucket Conveyor.
Electric Locomotives—narrow gauge.
Storage Battery Industrial Trucks.
Stevedore Hoisting and Transmission Rope.

They describe fully our complete line of machinery for the economical handling of bulk material, and undoubtedly contain information which will be of value to *you*.



ROBINS
Conveying Machinery

Belt conveyors, elevators, unloading towers, stocking and reclaiming bridges, coal and coke crushers. Write for Our Illustrated Bulletin

ROBINS CONVEYING BELT CO.

13-21 Park Row, New York
Salt Lake City Office—Newhouse Bldg.

Chicago Office—Old Colony Bldg.
Birmingham, Ala.—C. B. Davis Eng. Co., Brown-Marx Bldg.

VITRIFIED GRINDING WHEELS

There is a grinding wheel made for the particular class of grinding you have, and by procuring same your grinding troubles will disappear.

We would be pleased to receive full information regarding the class of grinding that you have.

Catalogue will be sent on request.

Vitrified Wheel Co., Westfield, Mass.



WELLER MFG. CO.

Designers and Manufacturers of
ELEVATING, CONVEYING AND POWER
TRANSMITTING MACHINERY

Power-House Equipment

Coal and Ash Handling Machinery
Storage Bins and Spouts

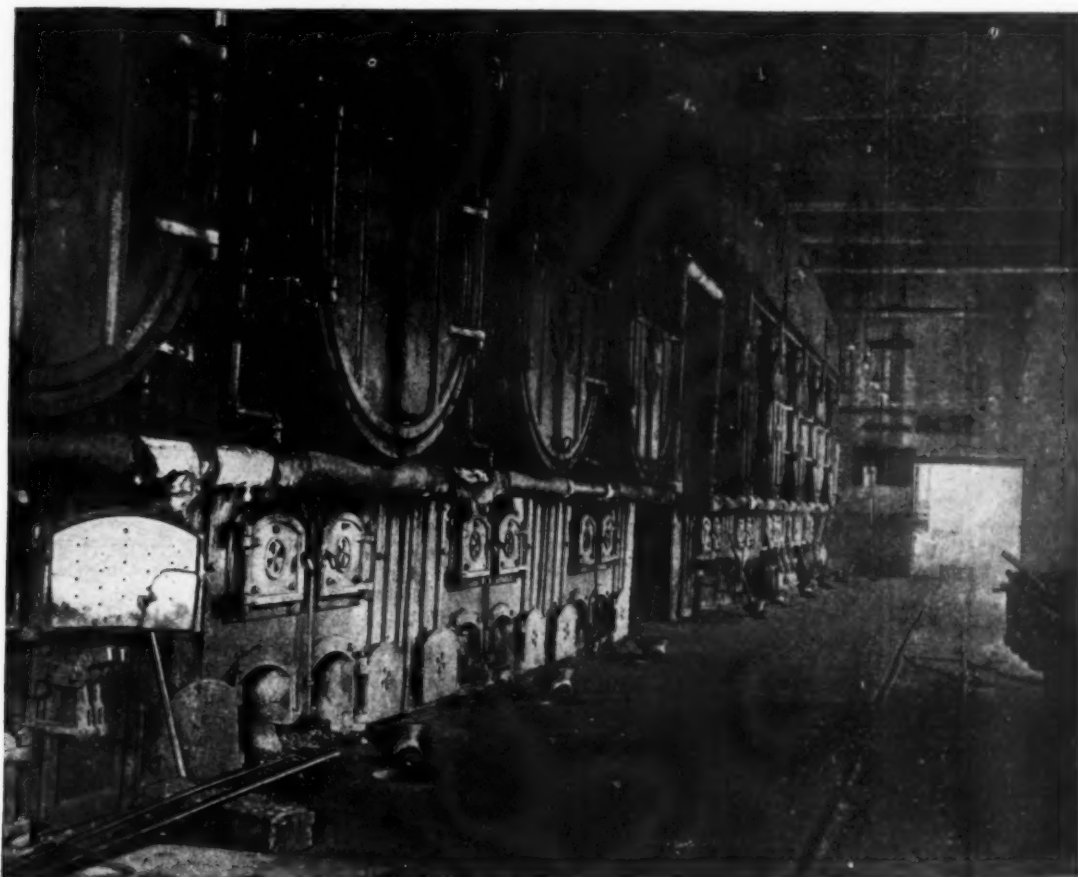
DEVERELL, SPENCER & CO.

Southeastern Sales Agents

GARRETT BUILDING

BALTIMORE, MARYLAND

Repeat Orders Prove Success



THE J. & J. Rogers Company, Ausable Forks, N. Y., were so pleased with the installation of the Vacuum Ash and Soot Conveyor at this plant that they ordered immediately a duplicate system for their paper mill. This installation is shown above and is located at the Palmer Mills, Three Rivers, Mass.

The Suction Ash Conveyor

at this plant handles the ashes from nine B. & W. Boilers. This line consists of 85 feet of horizontal pipe with one hopper intake in front of each boiler. Then through a 90° elbow, vertically 23 feet and finally through a second 90° elbow running 10 feet horizontally to the tank of 30 tons capacity built between the walls of the Boiler-room and the Power Plant.

A few of the many advantages of the SUCTION ASH CONVEYOR are its noiseless and dustless operation, the ashes are DRAWN—not blown—through the pipes. Consequently the pipes are not subjected to the sand-blast wearing action of the ordinary steam conveyor. Another big feature is the fact that the ashes are handled DRY—no chance of a freeze-up in winter.

A test made on one of our installations shows ashes moved at approximately 6 cents per ton.

** Our engineers will gladly show how this economical ash handler can be adapted to your plant. Write TODAY.*

The Vacuum Ash and Soot Conveyor Company

U. S. Express Building, New York, N. Y.

Agents

John S. Longnecker, 421 Wood Street, Pittsburgh, Pa.

Macan Jr. Co., Easton, Pa.

S. R. Vanderbeck, 20 South 15th Street, Philadelphia, Pa.

Widger Miller, 141 Milk Street, Boston, Mass.

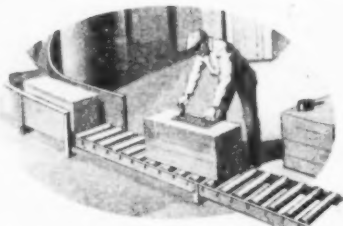
Carrick Engineering Co., 538 South Clark St., Chicago, Ill.

R. B. Whitacre Co., St. Paul, Minn.

Fred Upson, 683 Asylum Street, Hartford, Conn.

Wm. J. Payne, Candor, N. Y.

SOUTHERN AGENTS WANTED



Man Hunger

Of course you're man-hungry—so is every manufacturer.

The reason is shown above. You're wasting man-power. Gravity would do this work, allowing such men to produce—make a profit for you and bigger pay for themselves.

That last fraction of per cent. of output is yours if you turn over the work of toting and carrying to

Lamson Conveyors

They are always ready, they carry tirelessly, they cannot be enticed away.

They do release men for profitable work.

They speed up production by moving materials and parts and finished goods through the factory in a steady, orderly stream.

Conveyors are essential now that both war and industry are man-hungry.

Look around your factory. Is

there a man or machine idle, waiting for material or parts, or because finished goods clutter working spaces?

Whether you make automobiles or automatics, milling machines or motors, shells or shoes, you can increase production with Lamson Conveyors.

If you're man-hungry, if you are striving for greater output, you'll send for our book, "Conveying by Gravity."

THE LAMSON COMPANY

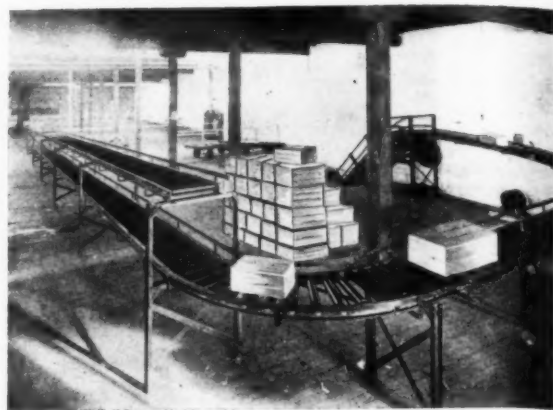
BOSTON, MASS.



Baltimore, - 10 E. Fayette Street
Atlanta, - 30 Moore Bldg.

Scarcity of Labor need not prevent the rapid handling of materials.

On the contrary, **AMCO** conveyors replace and save labor, and handle materials at less cost.



AMCO Ball Bearing Gravity Conveyors are built to fit all needs.

They rapidly and safely carry boxes, barrels, pails, cases, brick, pig-iron, ingots, lumber, etc., to any desired location.

We also manufacture Automatic Elevators, Power Conveyors, Belt Conveyors and all types of conveying equipment.

AMCO Conveyors do it better.

WE CAN SOLVE YOUR CONVEYOR PROBLEM.

ALVEY MANUFACTURING CO., ST. LOUIS, MISSOURI

NEW YORK
DETROIT

CHICAGO
SAN FRANCISCO

BOSTON
PHILADELPHIA

SEATING AND EQUIPMENT

for

SCHOOLS (Industrial—Public—Private)—AUDITORIUMS—CHURCHES—THEATRES



Moulthrop Movable Chair Desk
Desk Top is Adjustable
Vertically—Horizontally—Inclinably

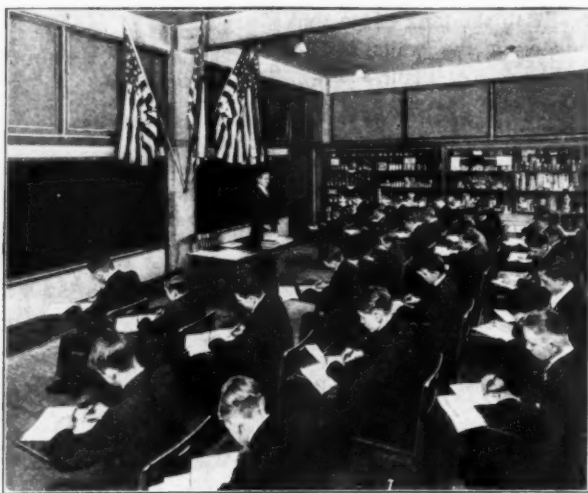
This Desk used in the Continuation Schools of:—

Armour & Company

Swift & Company

Nelson Morris & Co.

Those responsible for the establishing of educational facilities, either in connection with the actual operation of industries, or with the establishment of schools for children in the new industrial centers, will find valuable suggestions and aids in the selection and use of School Room Seating in our Special Catalog—"MOULTHROP MOVABLE CHAIR DESKS."



This view of the Continuation School of Armour & Co., Chicago, is typical of a Progressive Industrial School.



Style "D" Reversible Portable Blackboard

A Great Convenience and a Necessity for any Class Room

Our complete Class Room Supply Catalog and Price List No. 41 of BLACKBOARDS, CHARTS, MAPS, SANITARY SUPPLIES, ETC.

Contains valuable information and is a guide to proper equipment and practice in the CLASS ROOM.

AMERICAN SEATING COMPANY

GENERAL OFFICES, 1054 LYTTON BUILDING, CHICAGO

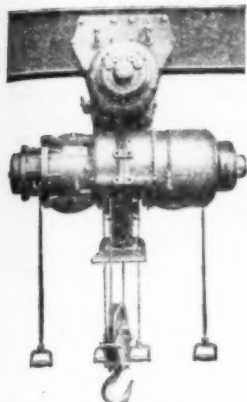
Sales Offices in All Principal Cities

THE SHEPARD LINE OF CRANES AND HOISTS IS COMPLETE -

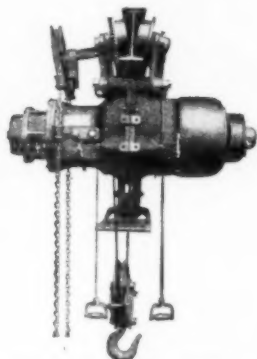
SHEPARD Cranes and Hoists are handling materials in ninety varied industries. The selection and extension of this equipment has been largely governed by the evident superiority of the design and the new standard of reliability in service which it has established.

"Hoist, Buy a Shepard"

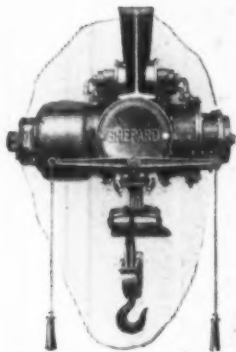
Our New Handbook "M" — describing the complete line—will be sent on request. Write for it Now.



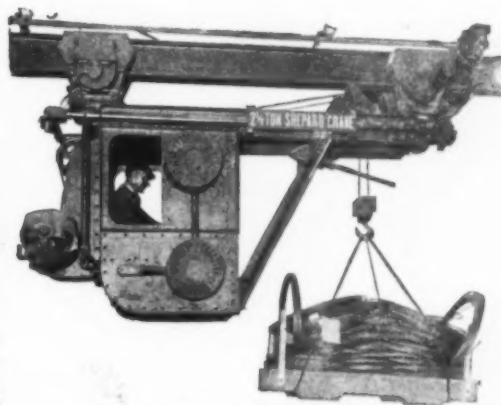
Foundry Control D. C. Hoist, with motor-driven trolley. Especially useful where loads must be carried distances too long for the workmen to push them on the runway efficiently.



One-Motor Hoist, used especially on short runways where it is necessary to get close to the wall with the load.



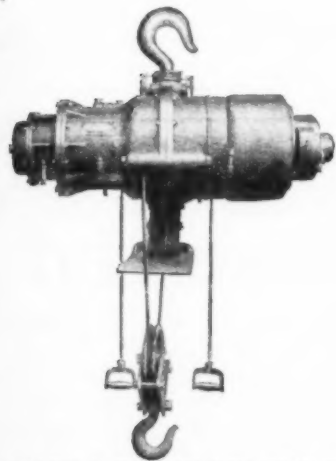
Our New Light-Capacity Hoist, for handling of loads just too heavy for one man.



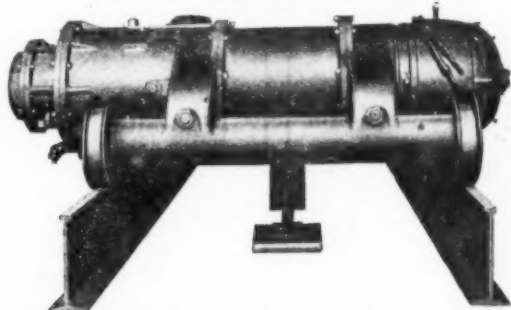
Where groups of small units in trays are to be handled, this type of Hoist has decided advantages, particularly where there are curves in the I-beam runway. It can be supplied with two load hooks where long flexible loads are to be handled.

SHEPARD

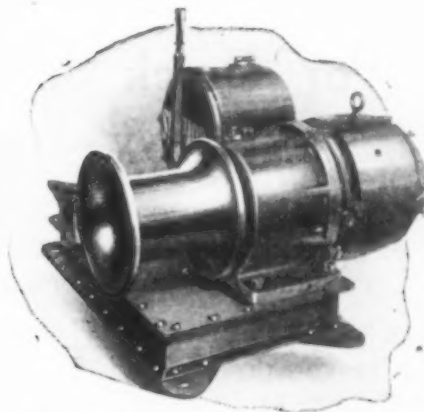
ELECTRIC CRANE & HOIST CO.
New York Montour Falls, N. Y. Pittsburgh
Philadelphia Boston, Baltimore, Birmingham, San Francisco
Chicago Montreal Melbourne-Austral London



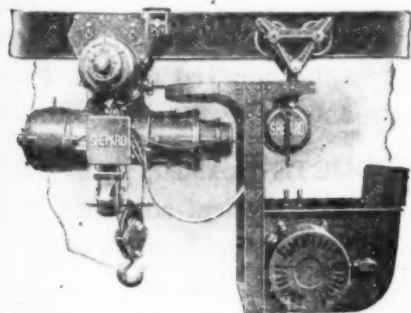
This type is well adapted for service requiring frequent transfer from one location to another. It is especially desirable for contractors' use.



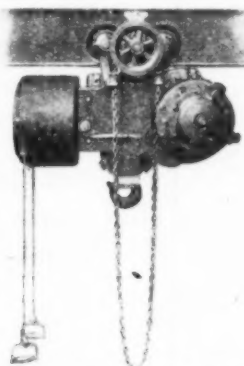
The sterling qualities of the Shepard Crane Trolley are secured by locating steel gearing and multiple discs within rigid cylindrical frames, completely protected and completely protecting workmen.



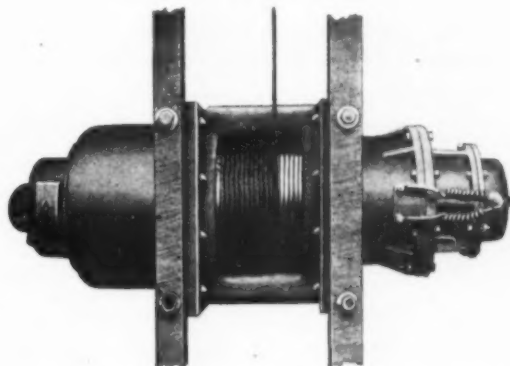
A compact, weather-proof Winch, with running parts completely enclosed and protected from all atmospheric conditions. Its uses are manifold in and about industrial plants.



The use of heavy-duty Monorail Hoists, with the flexibility of handling arrangements which transfer switches permits, revolutionizes handling methods in many industries. Can be enclosed for outdoor service.



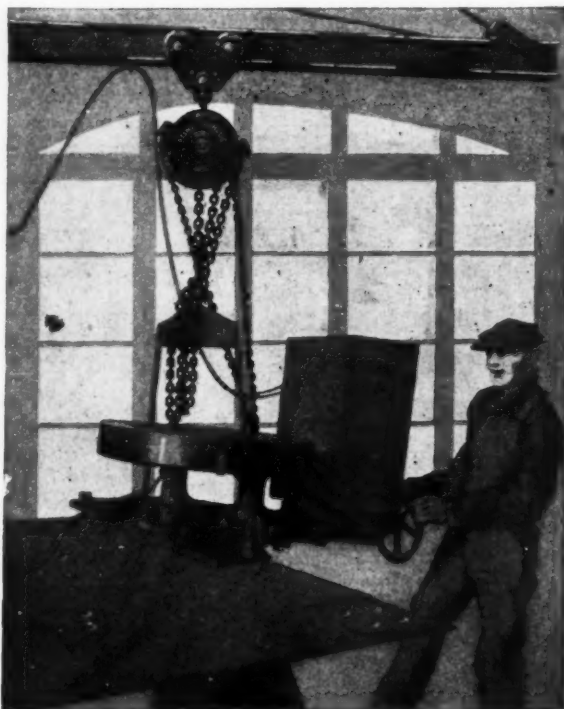
The use of this type of Hoist permits hoist service in low headroom where sufficient lift could not be otherwise obtained.



This Hoist is provided with a base for permanent mounting. It offers convenient means of electrifying derricks, jib cranes and hand-power elevators.



FORD TRIBLOC



For Quick Set-Ups of Heavy Tools

IT is not uncommon to find that the preparation for a machine operation consumes more time than the operation itself.

Have you ever tried a Ford Tribloc Chain Hoist to set up heavy tools? It's a hoist that is extremely portable and because of its great flexibility admits of fine adjustments of the tool to the work. You can bring the tool down just as close to the work as you please without endangering either because the efficient planetary gearing never slips. You can operate the hoist at excessive speeds or from acute angles without choking the hand chain in the blocks because of the patented LOOP Hand Chain GUIDE.

Safe to use and safe to buy—Guaranteed for five years. Ask for Catalog 3.

Ford Chain Block & Mfg. Co.

Second and Diamond Sts.

Philadelphia, Pa.



2140-D

YALE HOISTING HINTS



Yale Spur-Gear Block Hoisting Armature.

Why use men to lug and lift when a Yale Spur-Gear Block does it easier and quicker.

Powerful, strong **SAFE**—it relieves and releases men for more profitable work.

Built for endurance, with its steel vitals, steel hook and steel chain, the Yale Spur-Gear Block makes light work of heavy hoisting.

From hook to hook a line of steel.

For Sale by Machinery Supply Houses.

Send for Catalog.

For factory locking equipment use a Yale Master-Key System. Write for Particulars.

The Yale & Towne Mfg. Co.
9 East 40th Street New York



The Life of Babbitt TRIPLED

by the use of our No. 3 (Boronic-Copper Alloy), says one of the largest manufacturers of locomotives

This large concern buys our No. 3 (all metal, in shot form) in ton lots, and when asked what they use it for, they say "IN EVERYTHING." They discovered that they can increase the life of their babbitts 300 per cent. by the use of but three pounds of No. 3 to the hundred pounds of any grade of babbitt—entered in the simplest way.

BORONIC PRODUCTS deoxidize, purify, solid-cast and improve the physical structure of all metals "from gold to steel."

See our advertisements in the National Telephone Directory (Classified) of the Reuben H. Donnelly Corp. Our lists of products are filed with and can be seen at all the service stations of this corporation.

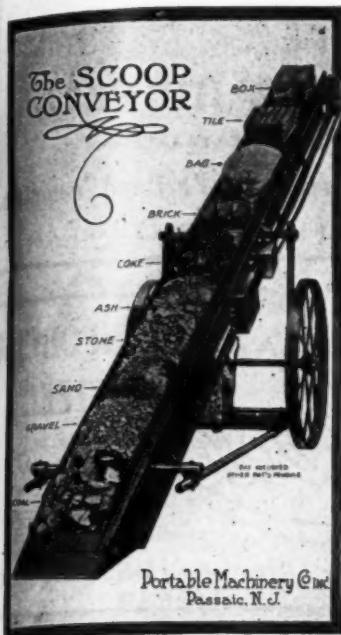
Send for our Literature and Price List NOW. You will be greatly benefitted if you ACT.

American Boron Products Company, Inc.
READING, PENNA., U. S. A.

(Sole Manufacturers)

Foreign Distributors:

National Alloys, Limited, London, Eng. China & Japan Trading Co., Ltd., Japan.
Edward Le Bas & Co., London, Eng. China & Japan Trading Co., Ltd., Shanghai, China.



**WILL
DO
THE
WORK
OF
FROM
6
TO
12
MEN**

Hundreds of manufacturers are now using the Scoop Conveyor to load and unload cars, trucks and wagons and to stack into storage piles or bins.

Ask for further information

PORTABLE MACHINERY CO., Inc.
PASSAIC, N. J.

Mother Ridgway Says:—

Her grandmother used to say,—

"YOU CAN'T THROW A GOOD THING OVER YOUR SHOULDER AND TURN AROUND QUICK ENOUGH TO PICK IT UP AGAIN."

Men have come to Coatesville, and have had a fine position. Then they threw the fine position over the shoulder. And after awhile, the next thing we heard it was not a matter of a position with them **BUT THE MATTER OF A JOB.**

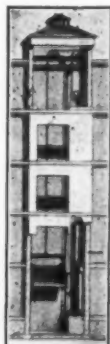
Now, when it comes to an elevator proposition, always remember the elevator is only next to the steam engine in importance.

WHEN YOU THROW THE RIDGWAY ELEVATOR OVER YOUR SHOULDER FOR AN ELECTRIC

You are "stung" for weeks and months with **"THE LEMON."**

You have to keep the miserable thing "to save your face."

If you have Real Good Mother Wit—the Old-Fashioned Out-on-the-Farm Wit, before you spend any money for elevators you will investigate why 2000 of the biggest and best managed concerns like this sample bunch



Elevator in Large Soap Factory in Jersey City



Double Geared



Direct Acting

Yale & Towne Mfg. Co.
General Electric Co.
Remington Typewriter Co.
Cluett, Peabody & Co.
American Tobacco Co.
Continental Gin Co.
R. F. Goodrich Co.
American Sm. & Ref. Co.

Procter & Gamble Co.
Packard Motor Car Co.
H. J. Heinz Co.
John Morrell & Co.
Federal Sugar Co.
E. I. Du Pont & Co.
John Wanamaker
Standard Oil Co.
Welsbach Light Co.
Sherwin Williams & Co.
Crane & Co. (Dalton)
International Harvester Co.
Midvale Steel & Ord. Co.

are all so keen to continually

"hook 'er to the Biler"

The Ridgway & Son Co.
COATESVILLE, PA.

Elevator Makers to Folks Who Know

Warsaw Elevator Company
T. FRANK WILHELM, Manager
Special Attention Given to Repairs
Office and Warehouse
Mercer, Grant and Water Sts. BALTIMORE, MD.

GRINDING WHEEL DRESSERS
of Every Description
"HUNTINGTON"—"DIAMO-CARRO"—"SHERMAN"
DIAMONDS
The Desmond-Stephan Dresser Co.
URBANA, OHIO

American Elevators Built by **AMERICAN ELEVATOR & MACHINE CO.**
INCORPORATED
LOUISVILLE KY.

ELEVATORS MOFFATT MACHINERY MFG. CO.
HAND—BELT—ELECTRIC
AND HYDRAULIC
MACHINISTS AND FOUNDERS
CHARLOTTE, N. C.

Standard for a third of a century.
Passenger and Freight.
All Powers.
TURNER ELEVATORS
K. C. ELEVATOR MFG. CO.
(Established 1881)
2601-3-5-7 Madison Ave., Kansas City, Mo.

Long Life Bushings In Spite of Neglect

Oil-less Bushings

"NIGRUM" (Impregnated Wood) "BOUND BROOK" (Graphite-and-Bronze)

Trade Mark Reg. U. S. Pat. Off.
All genuine Graphited Oil-less Bushings have always been made at Bound Brook, U. S. A.
BOUND BROOK OIL-LESS BEARING CO.
Bound Brook New Jersey
Specialists in the manufacture of Oil-less Bushings for more than a third of a Century

Wherever a Hoist Can Be Used

WRIGHT

HIGH SPEED CHAIN

Hoists

will do the work quickly. They will outlast and outlift any other.

Let us send catalogue R-16.

WRIGHT MFG. CO.
LISBON, O.

Handling Heavy Castings with a Wright High Speed Hoist.



The picture shown above is very simple—merely a motor-truck and a concrete road;

And yet, simple as it may appear, it typifies at once the South's greatest need and greatest opportunity—the readjustment of the road surface to the new freight vehicle for the hauling of heavier loads with greater dispatch at reduced power cost and lessened wear on the road.

The above view duplicated on all main highways in the South will mean an unparalleled development in agriculture and commerce.

Public spirited citizens desiring to inform themselves on how to permanently readjust roads to meet new conditions in their respective communities may obtain such information by addressing:

Standard Portland Cement Co.
BIRMINGHAM, ALA.



**A
Concrete
Road
Is
Permanent**

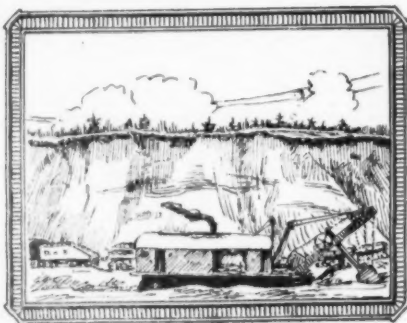
SAVES GASOLINE

**CONNECTS
FARM WITH CITY**

NO MUD NO DUST

Write us for free copy
"Concrete Highways"

DIXIE PORTLAND CEMENT CO.
CHATTANOOGA, TENN.



**BRIER
HILL
ORE**

Hundreds of thousands of Tons of Ore are consumed annually in our Blast Furnaces

**BLOOMS—FORGING & RE-ROLLING BILLETS—SLABS
SHEET & TIN BAR—PLATES—SHEETS—ETC.**

THE BRIER HILL STEEL COMPANY
YOUNGSTOWN, OHIO

Southern States Portland Cement



We produce only one grade,

THE HIGHEST

ALWAYS UNIFORM

Southern States Portland Cement Co.

Office and Mills—ROCKMART, GA.

Laclede

**REINFORCING
STEEL**

Plain Round
Plain Square
Deformed Round
Deformed Square
Twisted Square

LACLEDE STEEL CO., Federal Reserve Bank Bldg., ST. LOUIS, MO.
Works at Madison, Ill. and Alton, Ill.

Marine "VITA" Glue

Sets and stays in seams.

Has tenacity and vitality.

For samples and prices, write to

BINNEY & SMITH COMPANY

81 Fulton Street, New York



**IMPERIAL WELDING
AND CUTTING EQUIPMENT**
OXY-ACETYLENE PROCESS

Welds everything in metal—cuts anything in steel or wrought iron. We can give QUICK WELDING SERVICE in our new shop. An aid to manufacturers having Government contracts. Full data on request. Write for Free Catalog.

The Imperial Brass Mfg. Co., 507 S. Racine Ave., Chicago

Manufacturers Using Gas

for any process or operation requiring heat, and concerned to reduce cost of the fuel one-fourth to one-half, obtaining most efficient service, write today for literature on the

KEMP AUTOMATIC GAS SYSTEM

When, after investigation of the local conditions, we find we can safely guarantee reduction of twenty-five (25%) per cent. in gas consumption, we make investment and furnish equipment on approval and you reap the greater benefit.

The Kemp System uses municipal gas for industrial purposes, usually saving fifty (50%) per cent.

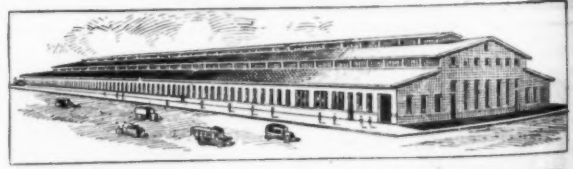
THE C. M. KEMP MFG. CO., 405-413 E. Oliver St.
BALTIMORE, MD.

**ELECTRIC FURNACE STEEL CASTINGS
STEEL MILL EQUIPMENT
TREADWELL ENGINEERING CO.**
EASTON, PA.

INTERNATIONAL STEEL & IRON CO.

EVANSVILLE, INDIANA

SERVICE



SERVICE

WAREHOUSE AND FABRICATING PLANT—EVANSVILLE, IND.

IRON AND STEEL

STANDARD AND BETHLEHEM
CARRIED IN WAREHOUSE STOCK FOR
IMMEDIATE SHIPMENT

STEEL for BRIDGES and BUILDINGS
FABRICATED PROMPTLY

Elevators
Cornices and Skylights
Steel Ceiling

STORE FRONTS
WRITE FOR GENERAL CATALOGUE

Millwork and Glass
Ornamental Iron
Curtain-rod, Railing

Proving the Strength — of — Clinchfield Portland Cement

This cut shows a 66-inch concrete pipe made by Lock Joint Pipe Company, East Orange, N. J., for the city of Savannah, being tested. The pipe, though only two weeks old, withstood a load of 21,000 lbs. on a 1-inch knife edge, three feet six inches long. Support, arc of only 15°, deflection 1-16 inch.

The two contracts from the city of Savannah call for 43,000 feet of this pipe ranging in sizes from 24" to 72". Clinchfield Portland Cement furnished by Chapman-Clark Co. of Savannah was used exclusively.

**It's Clinchfield
for Strength
Always**

**CLINCHFIELD
Portland Cement Corporation**

Main Sales Office and Mills:
KINGSPORT, TENN.

BRANCH OFFICES:

CINCINNATI, O.

SAVANNAH, GA.

1305 Union Trust Bldg.

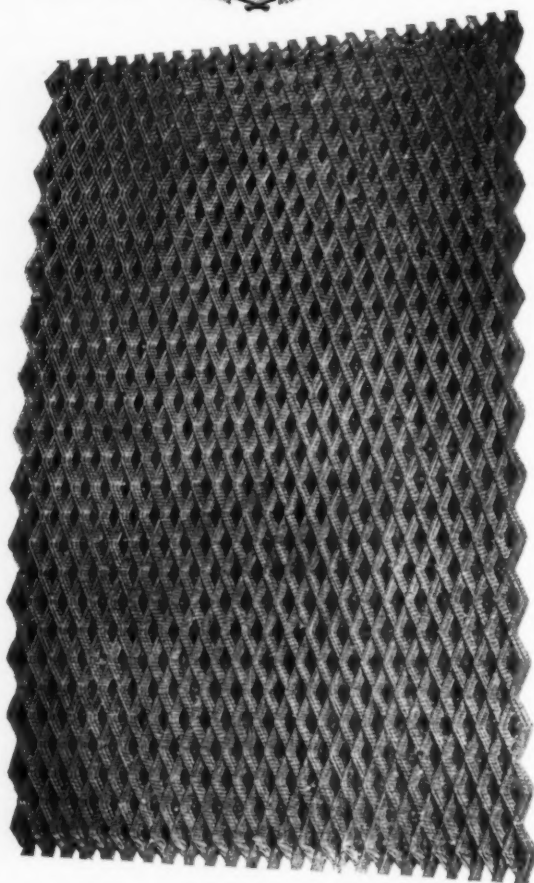
413-415 American Bank & Trust Bldg



CONCRETE



REINFORCING



"Steelcrete" is uniform. The diamond meshes fit as neatly together as the teeth of smooth-running gears.

Make Spacing Correct and Sectional Area Uniform

Two vital factors of every reinforcing job, made safe and sure with "Steelcrete" correct spacing and uniform sectional area.

Just notice how each "Steelcrete" sheet fits snugly into the next. Each diamond mesh is precisely like every other. With this close nesting the sectional area must be right always, the spacing correct.

"Steelcrete" is uniform, regular,

For speed and profit, for dependable uniform work, it pays to use "Steelcrete". Send for the "Steelcrete" Handbook; it contains practical information.

For all work that is in accord with our Government's war program "Steelcrete" is readily obtainable.

true. It assures that your designs will be followed accurately.

"Steelcrete" is compact; requires but little storage space. It saves time in handling.

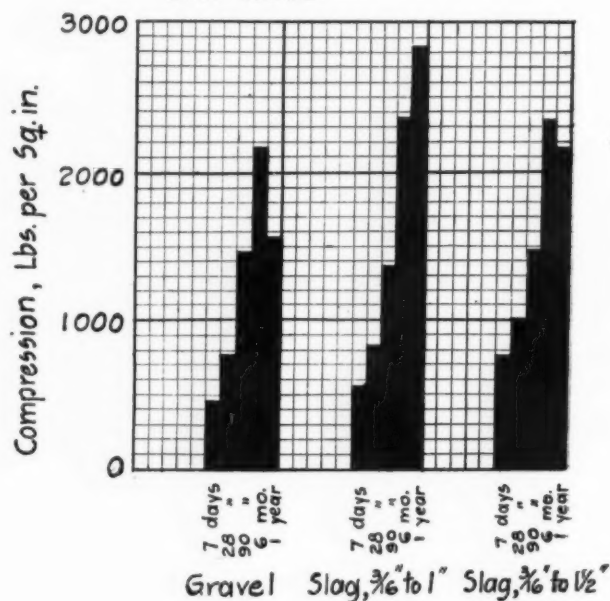
"Steelcrete" can be placed accurately by unskilled labor. Two men can readily handle any size—even the big 16-ft. sheets.

The Consolidated Expanded Metal Companies BRADDOCK, PA.

BRANCH OFFICES:
PHILADELPHIA, Larkin Bldg. CHICAGO, Otis Bldg. PITTSBURGH, Oliver Bldg.
REPRESENTATIVES:
NEW YORK, 8 West 40th St., Expanded Metal Engineering Co. BOSTON, Penn Metal Co.
DALLAS, Builders' Metal Products Co. SAN FRANCISCO, Holloway Expanded Metal Company.
TORONTO—Baines & Peckover.

Summary of Comparison between Slag and Gravel Concrete

Mix 1:3:6



Proving the Value of Aggregates

Nothing proves the fact that the strength and durability of a concrete depends largely upon the form of coarse aggregate used better than the chart shown opposite.

And it is only a substantiation of like results obtained through the practical use of slag in thousands of concrete structures throughout the country.

Furthermore, slag concrete is fire-resistive, repair-free and practically everlasting.

Carnegie Steel Company

464 Frick Building Annex, Pittsburgh, Pa.

"BULLDOG" MINING DRILL STEEL

There are various brands of Mining and Rock Drill Steel, but there is only one "BULLDOG."

"BULLDOG" STEEL
HOLDS ALL RECORDS

EFFICIENT
ENDURING
ECONOMICAL

Prompt Deliveries
from Stock



HOLLOW and SOLID.

In ROUND, HEXAGON,
OCTAGON, QUARTER
OCTAGON and CRUCI-
FORM.

If you want the Best
It is "BULLDOG"

MADE-UP STEELS in all standard sizes a Specialty. Lengths Shanked, Collared and Bitted from 12" to 12'. Send for our prices.

Made Only by the

INTERNATIONAL HIGH SPEED STEEL COMPANY

Works: ROCKAWAY, N. J.

99 Nassau Street, NEW YORK

MERCHANT BAR IRON

— FOR —

**Shipbuilding, Dry Dock and
Other General Work**

We Invite Your Inquiries and Specifications

The Milton Manufacturing Company

MILTON, PENNSYLVANIA

TENNESSEE COAL, IRON & RAILROAD Co.

General Offices:
Brown-Marx Bldg., Birmingham, Ala.

PRODUCERS OF

OPEN HEARTH STEEL

Blooms Billets Twisted Squares Slabs
Rails Angles Sheared Plates Bars

PIG IRON

Foundry, Forge, Basic
"DeBardeleben" "Ensley" "Alice"

Tennessee Special Tool Steel

COAL

Steam, Gas, Blacksmith, Domestic

COKE

Furnace, Foundry, Domestic



Rail Loading Docks at Ensley Mill. Showing Modern Methods of Rail Handling.

BRANCH OFFICES:

Chicago
Pittsburgh

Boston
Denver

Buffalo
Detroit

New Orleans

St. Louis
St. Paul

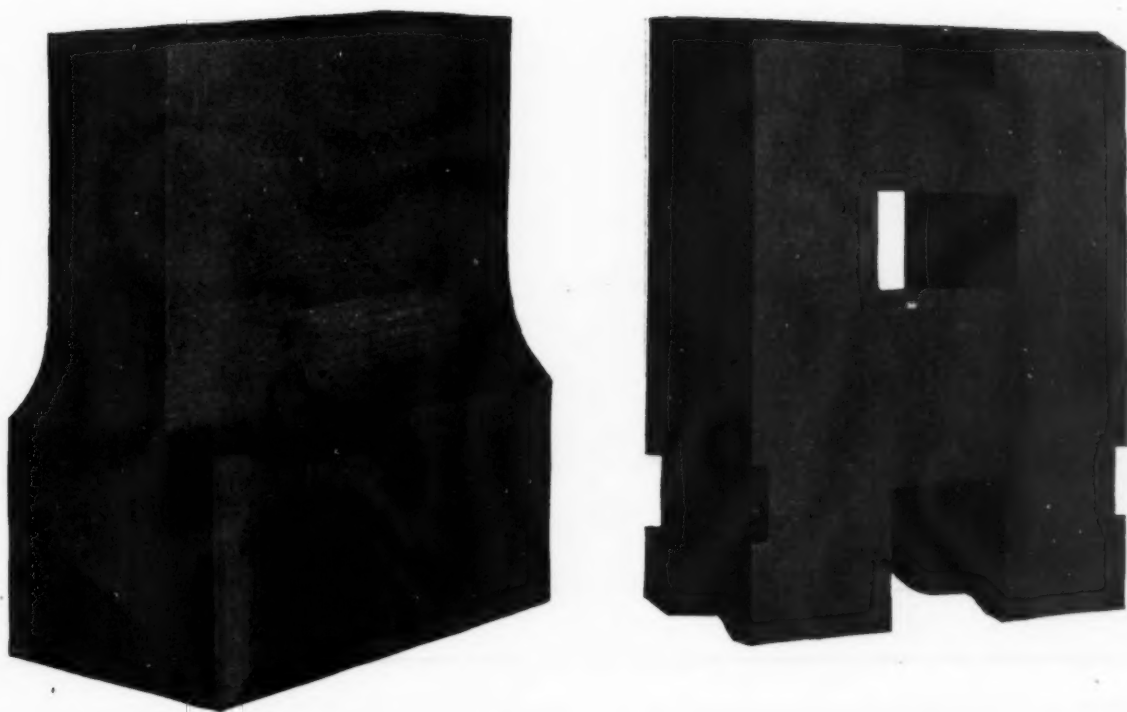
Cincinnati
New York

Cleveland
Philadelphia

Pacific Coast Representatives: United States Steel Products Co., San Francisco, Seattle, Portland, Los Angeles

Export Representatives: United States Steel Products Company, New York City

CAMDEN



Rams and Knuckles!

Can only be made by shops possessed of solid steel, hogging
machinery and perseverance

When you order

Camden Forgings

you get that steel, machinery and perseverance with the
forgings to boot!

CAMDEN FORGE CO.
CAMDEN, N. J., U. S. A.

PAINTING CONTRACTORS—ATTENTION!

With the aid of a Spraco Gun one handy man can do the work of three to five skilled painters using hand brushes, depending upon the nature of the work.

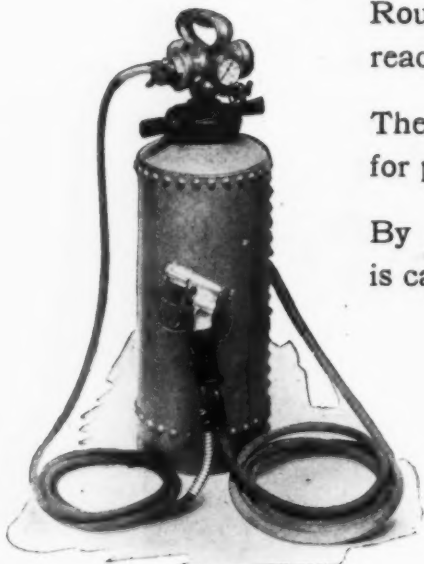
Save Time and Paint

Finely finished surfaces, free from streaks and brush marks, are produced.

Rough surfaces and those extremely difficult or impossible to reach with a hand brush are easily and rapidly covered.

The paint Gun may be quickly attached to the extension pole for painting surfaces beyond the reach of the operator.

By means of interchangeable nose pieces the Standard Gun is capable of handling all kinds of liquid coatings.



SPRAY ENGINEERING COMPANY

Engineers and Manufacturers

43 Federal Street

BOSTON, MASS., U. S. A.

TRUMBULL

Open Hearth

Ingots, Blooms, Billets, Slabs, Sheet Bars

Blue Annealed Steel Sheets

Black and Galvanized Sheet Steel

Galvanized and Painted Formed Roofing Products

Coke Tin Plate

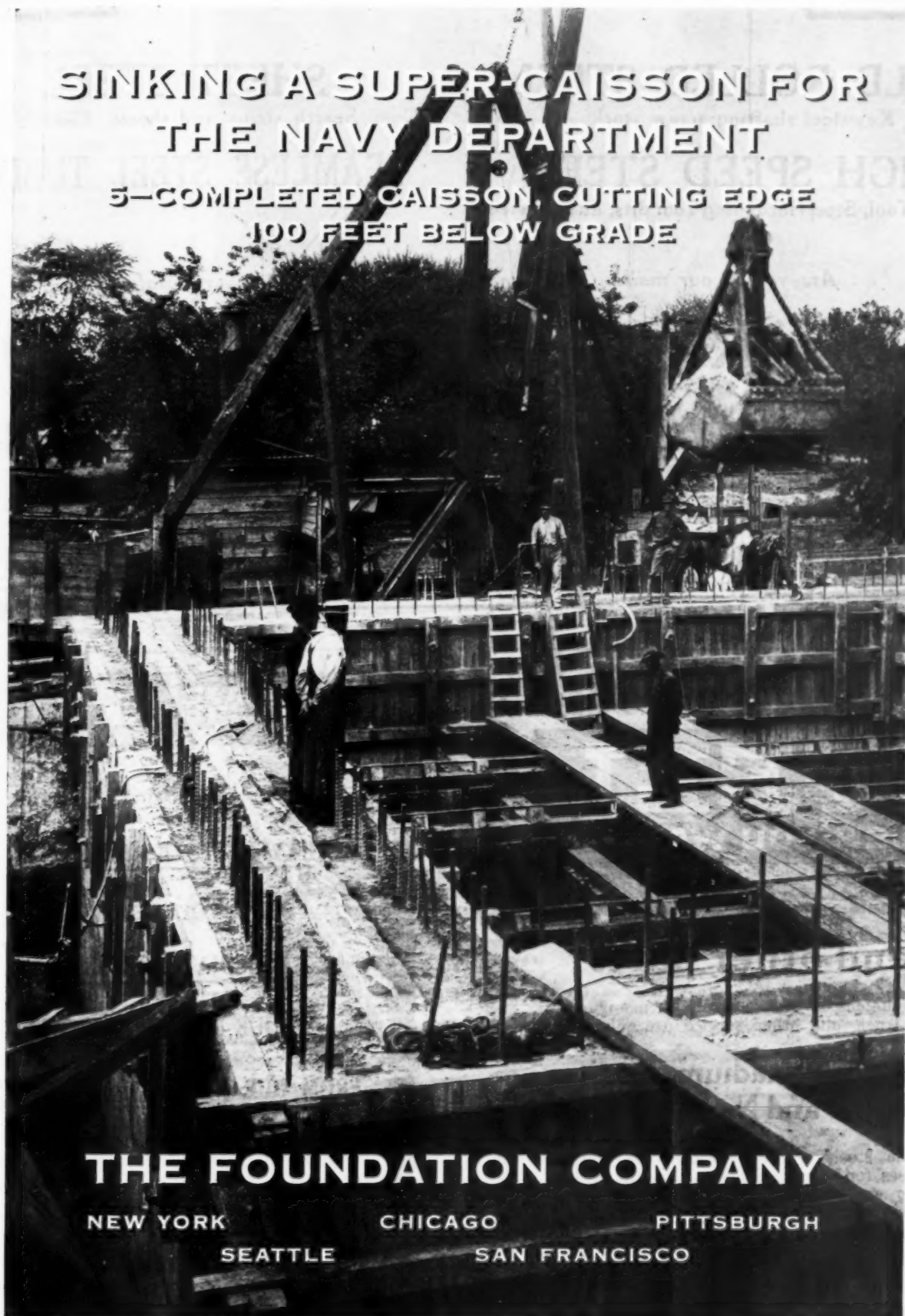
Hot and Cold Rolled Strip Steel

THE TRUMBULL STEEL COMPANY

GENERAL OFFICE: WARREN, OHIO

SINKING A SUPER-CAISSON FOR THE NAVY DEPARTMENT

5-COMPLETED CAISSON, CUTTING EDGE
100 FEET BELOW GRADE



THE FOUNDATION COMPANY

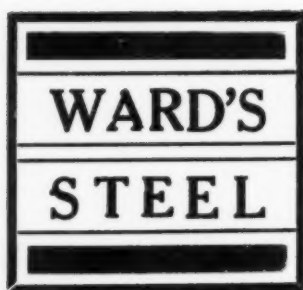
NEW YORK

CHICAGO

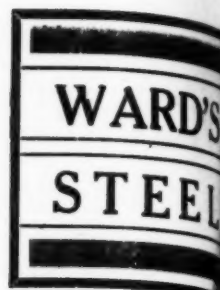
PITTSBURGH

SEATTLE

SAN FRANCISCO



STEEL



COLD ROLLED STEEL

Key-steel shafting screw stock

HIGH SPEED STEEL

Carbon, Tool, Steel Hardening Tool Bits, alloyed steel

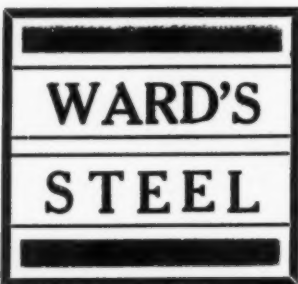
SHEET STEEL

Open hearth strips and sheets, Electric sheets

SEAMLESS STEEL TUBING

Are you on our mailing lists for Stock Sheets. Send for our Catalogue.

EDGAR T. WARD'S SONS CO.



BOSTON

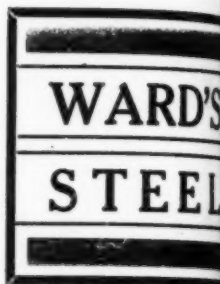
NEWARK

PHILADELPHIA

16TH STREET AND INDIANA AVENUE

NEW YORK

CHICAGO



STEEL

WHEN YOU WANT IT

For Gears, Pinions and other parts

subject to severe strain in motor
truck and other service use only

Chrome Vanadium, Chrome Nickel and Nickel Steels

These steels are in stock in our ware-
houses for quick shipment. It will be to
your great advantage to get in touch
with Aborn on your next order for motor
truck steels of any kind.

Century Steel Works
Poughkeepsie, N. Y.

Aborn Steel Company, Inc.
34 Clarke St., New York, N. Y.

PHILADELPHIA, PA.
269 Drexel Building

ROCHESTER, N. Y.
133 Andrews Street

BUFFALO, N. Y.
520 Marine Bank Building

174

HAVEMEYER BARS

"Every Pound Pulls"

By Using

HAVEMEYER BAR SERVICE

YOU GET

IMMEDIATE SHIPMENT

OF YOUR REINFORCING STEEL

FROM OUR NEAREST WAREHOUSE

Birmingham warehouse carries the
largest stock of reinforcing bars in the
South—all sizes—rounds and squares.
Address Birmingham Office.

CONCRETE STEEL COMPANY
42 Broadway, NEW YORK

Southern Office: Birmingham, Ala., Brown-Marx Bldg.

DISTRICT SALES OFFICES:

CHICAGO, ILL.
Menard's Bldg.

BOSTON, MASS.
7 Water Street

PHILADELPHIA, PA.
Pennsylvania Bldg.

YOUNGSTOWN, O.
P. O. Box 24

SYRACUSE, N. Y.
Union Bldg.

FABRICATING SHOPS AND WAREHOUSES:

CHICAGO

BIRMINGHAM

PHILADELPHIA

NEW YORK

AGENCIES AND STOCKS IN PRINCIPAL CITIES

Types
Lacka
Sh
The follow
and sizes to
sheet pile co
Stre

Suitable fo
pecially cons
tensional and
of the pile se
is much supe
in sewer and

For light
work in cut
trenches, etc.

Preferab
strength of t
portance, as
attractions.
very thin in
verse streng
thickness ov
the arches th
of the interi
the back of a
straight con
timbers.

For cons
tensional an
in connecti
transverse
flange acts
the section
means for a
braces, etc.

Lackav
Steel

Best for
exposed to
The protect
adhesively
to the piling
perfect prot
and can be
steel. Wate
Complete di
ries of any st

HO

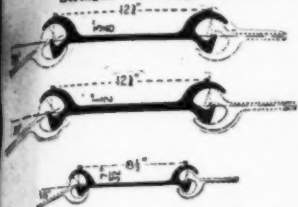
ANGLES
CHANN
BARS
SPIKES
CHAIN
BOLTS
NUTS
NAILS

Hank
24th

Types and Sizes of Lackawanna Steel Sheet Piling

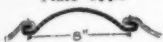
The following sections offer types and sizes to economically meet any sheet pile construction problem:

Straight-Web Type



Suitable for general work and especially constructions requiring high tensional and compressive resistance of the pile section. The smallest size is much superior to wooden sheeting in sewer and trench work.

Plate Type



For light cofferdams, permanent work in cut-off walls, core walls, trenches, etc.

Arched-Web Type



Preferable where transverse strength of the pile is of primary importance, as in braced or tied constructions. A wall of this piling is very thin in proportion to its transverse strength, having no greater thickness over all at the centers of the arches than the over-all thickness of the interlocked joints. Flattening the back of the web furnishes a long, straight contact with the waling timbers.

Center-Flange Type



For constructions requiring high tensional and compressive strength, in connection with a fairly high transverse strength. The center-flange acts as a stiffener, increases the section modulus and furnishes means for attaching transverse ties, braces, etc.

Lackawanna Protected Steel Sheet Piling

Best for permanent installations exposed to severe corrosive action. The protective facing of concrete, adhesively and mechanically bonded to the piling, offers a permanent and perfect protection against corrosion and can be driven down with the steel. Waterproof and rigid.

Complete dimensions, weights, and properties of any section sent on application.



A Very Satisfactory Type of Lackawanna Steel Sheet Piling Cofferdam for Watertight Excavation

This single-wall semi-circular cofferdam was driven by Fred T. Ley & Co. for building the permanent concrete intake for condenser cooling water at the plant of Turners Falls Power & Electric Co., Chicopee, Mass.

The 14-inch by 3/8-inch Lackawanna Arched-Web Sheet Piling in 30-foot lengths was assembled and then driven by a steam hammer swung from the end of a derrick boom, the derrick being located approximately in the center of the circle.

The diameter of the circle, 40 feet, was made large enough so that a deep excavation could be made in the center, yet with large enough banks of sand inside the sheet piling wall to afford ample support.

This same type of cofferdam has been used successfully in larger work with radius of the circle as high as 200 feet. In many instances, the semi-circular construction involves no more sheet piling in its handling and driving than would be necessary in a box cofferdam, and for shallow excavations the absence of cross bracing leaves the interior unobstructed—which is a big advantage in building the permanent structure.

Our Sheet Piling Engineers have data on about every imaginable cofferdam type, and will gladly help prospective customers to select the most economical methods.

Ask for our book, "Lackawanna Steel Sheet Piling."



The special arched type of web gives additional transverse strength, and the flexibility in the joint permits an irregular structure to conform with every requirement.

Lackawanna Steel Company

General Sales Office and Works: Lackawanna, N. Y.

ATLANTA
BOSTON

BUFFALO
CHICAGO

CINCINNATI
CLEVELAND

DETROIT
NEW YORK

PHILADELPHIA
ST. LOUIS

SAN FRANCISCO
HAVANA

Licensees for the manufacture of Lackawanna Steel Sheet Piling

For Great Britain and British Colonies in the Eastern Hemisphere, Cargo-Fleet-Iron Co., Ltd., Middlesbrough, England. For France, Italy, Spain, French Colonies and Protectorates, Italian Colonies and Spanish Colonies in the Eastern Hemisphere, Cie Des Forges & Aciéries de la Marine et d'Homécourt, Paris, France.

384

HOT GALVANIZING MEANS BEST IN QUALITY

ANGLES
CHANNELS
BARS
SPIKES
CHAIN
BOLTS
NUTS
NAILS

CAPACITY
200 TONS
PER DAY

WASHERS
CLICH RINGS
CROSS ARM BRACES
HOOP and
BANDS
CASTINGS
ROUNDS
PLATES

No tapping necessary on thread of bolts.

Special arrangements for prompt delivery of material used in the construction of wood and steel ships

Estimates furnished upon request

Hanlon-Gregory Galvanizing Company
24th STREET and A. V. R. R. PITTSBURG, PENNA.

Over The Top!

CINCINNATI is always First and Foremost
CINCINNATI Knows What To Do, How To
Do It and When To Finish It.

CISCO SERVICE
IS A PRODUCT OF CINCINNATI

THE CINCINNATI IRON AND STEEL COMPANY

— Sellers of —

ALL PRODUCTS OF IRON AND STEEL

Topping Brothers

**122 Chambers Street
NEW YORK**

Our stock of **HEAVY** and **MARINE** Hardware is the largest of its kind in this country.

Let us figure on your requirements of

**BOLTS, NUTS, RIVETS, CHAINS
TACKLE and CHAIN BLOCKS
TREENAIL AUGERS
SHACKLES
RIGGER SCREWS**

**All Kinds of JACKS, SHIP CLAMPS
SHIP and RAILROAD SPIKES
CABIN HARDWARE
TREENAIL WEDGES
CAULKING TOOLS**

**CARGO BOOM and MAST FITTINGS
CONTRACTORS' SUPPLIES**

GULF STATES STEEL COMPANY MANUFACTURERS OF **Basic Open Hearth Steel Products**

Ingot
Blooms
Billets
Slabs

Light Rails
Steel Bars
Round Bars
Square Bars

Flat Bars
Half Rounds
Concrete Bars
Twisted Squares

Wagon Tire
Bolt-Steel
Rivet Steel
Hexagon Bars

AND A FULL LINE OF WIRE PRODUCTS

Wire Rods
Bright Nail Wire
Bright Wire (Hard or Soft)
Bright Crimping Wire
Bright Market Wire
Bright Staple Wire
Bright Fence Staples
Annealed Wire Nails

Galvanized Telegraph and Telephone Wire
Wire Nails
Black Varnished Fence Wire
Galvanized Plain Fence Wire
Galvanized Market Wire
Galvanized Fence Staples
Galvanized Wire Nails
Galvanized Barbing Wire
Bale Ties

Annealed Plain Wire
Annealed Market Wire
Annealed Baling Wire
Rivet Wire
Redrawing Wire
Varnished Market Wire
Galvanized Barbed Wire
Galvanized Hard Coil Spring Fence Wire

Southern (Woven Wire) Field Fence **SPECIAL NOTICE**

The reason our **STEEL PRODUCTS** are so uniform in quality is due to the fact that every operation of manufacture, from the Iron Ore to the finished article, is controlled at our steel plant. Iron Ore and Coal are mined on our properties—the Ore is smelted in our Blast Furnace, and the Pig Iron is converted into Basic Open Hearth Steel in our Steel Furnaces. By controlling the manufacture from the "ground up" we are in position to give our trade material exactly as specified, and to guarantee the quality. Our daily output is over 500 tons of Basic Open Hearth Steel Products.

Our works are located at Alabama City, Alabama, in the heart of the rich mineral and manufacturing section. Four important **TRUNK LINES** operate fast through trains South, East, North and West. Alabama City is especially well located, owing to its close proximity to the Southern ports of New Orleans, Mobile, Pensacola and Galveston on the Gulf of Mexico, and to Savannah, Brunswick, Jacksonville, Charleston, Wilmington and Norfolk on the South Atlantic.

Low inland rail freight rates and quick transportation are enjoyed to these ports, from which vessels sail to all parts of the world. Special rail freight rates are also in effect from Alabama City to North Atlantic ports, such as Baltimore, Philadelphia, New York and Boston, and to Pacific Coast ports, such as San Francisco, Tacoma, Seattle, Portland and Vancouver.

We will appreciate your inquiries when in the market, and will gladly furnish any information requested as to Inland Railroad Freight Rates to American Ports, Ocean Rates, Sailing Schedules, Insurance, Consular Documents, etc.

GULF STATES STEEL COMPANY

General Sales Offices

BIRMINGHAM, ALABAMA, U. S. A.

Works:
ALABAMA CITY, ALA.

EXCELSIOR Wire Products

Backed by a Generation of Manufacturing Experience

Riddles Wire Cloth
Wire Lath Wire Fence
Wire Rope Sand Screens
Machine Guards

WRIGHT WIRE COMPANY

WORCESTER, MASS., U. S. A.

Branch Offices and Warehouses

BOSTON NEW YORK PHILADELPHIA CHICAGO
TULSA SAN FRANCISCO

LIBERTY QUALITY COKE TIN PLATE

THE LIBERTY STEEL CO.
WARREN, OHIO

Jones & Laughlin Steel Company

General Offices:
Jones & Laughlin Building
PITTSBURGH

MANUFACTURERS OF

VARIOUS STEEL PRODUCTS

WORKS:

South Side Works Keystone Works
Eliza Furnaces & Coke Ovens Soho Works
Aliquippa Works

BRANCH OFFICES:

Boston Buffalo Chicago
Cincinnati Cleveland Detroit
New York Philadelphia San Francisco
St. Louis Washington



Anchor Post Fences

These are the nights when watchmen are tempted to think more of their personal comfort than of your plant's well-being. The thief, the pillager and the firebug know the frailties of watchmen on such nights and time their acts accordingly. Foil their plans with an

ANCHOR POST FENCE of Chain Link Woven Steel

An Anchor Post Fence is on the defensive at all times and in all weather. It presents to the unwelcome trespasser a steel barrier so formidable that it discourages even the thought of penetrating or scaling it.

The outside of the fence presents a smooth, unbroken surface of Chain Link Fabric that not even a cat could climb. And it is topped with a barbed wire entanglement that is extremely business-like.

There is no better or more lasting fence for the purpose than an Anchor Post Fence. Proof of it is in the class and number of Anchor Post protected government and private properties. Catalog 52.

Anchor Post Iron Works

167 Broadway, New York

Boston, Mass. 79 Milk Street Philadelphia, Pa. Real Estate Trust Bldg. Hartford, Conn. 902 Main Street Cleveland, O. Guardian Bldg. Atlanta, Ga. Empire Bldg.

2227-G



Keeping Out the Hun— “Over Here” as Well as “Over There”

Even in peace-time, an intrusion-proof protective fencing pays for itself over and over again in the elimination of loss from petty thievery. But today, with enemy agents and sympathizers seeking by every means to cripple our industrial activity, the absence of such a fence is merely an invitation to the traitor and the spy.

PAGE WIRE-LINK FABRIC



This fabric is the crowning achievement of 35 years of Page dominance in the fence field. It is sturdy enough to resist a battering ram; it is practically unclimbable; it is sightly and lasting. All Page fabric is made from wire drawn in our own great mills.

When desired, we can furnish Page Wire-Link

Other PAGE Quality Products

Special Analysis Wire
Armco Iron Welding Wire
Galvanized Wire
Wire Mill Products
Woven Wire Farm Fence
Wire Lawn Fence
Ornamental Iron Fence
Architectural Iron
“Copperweld”—Copper Clad
Steel—Wire
Armco Iron Magnet Core Wire
Spring Wire
Rope Wire

Fabric from billets of Armco (American ingot) Iron, produced for our use by the American Rolling Mill Company of Middletown, Ohio. The special rust-

resisting qualities of this iron are world-famous; and we possess the sole right to its use in wire products.

Write Our Engineering Department at Adrian

There is a wide range of Page wire products which will save money or provide greater efficiency in your business. Not alone protective fencing, but interior partitions, machinery guards and scores of special uses.

Our long experience is at your service without obligation on your part.

PAGE STEEL & WIRE COMPANY

Formerly Page Woven Wire Fence Company

Established 1883

ADRIAN, MICH

Factories

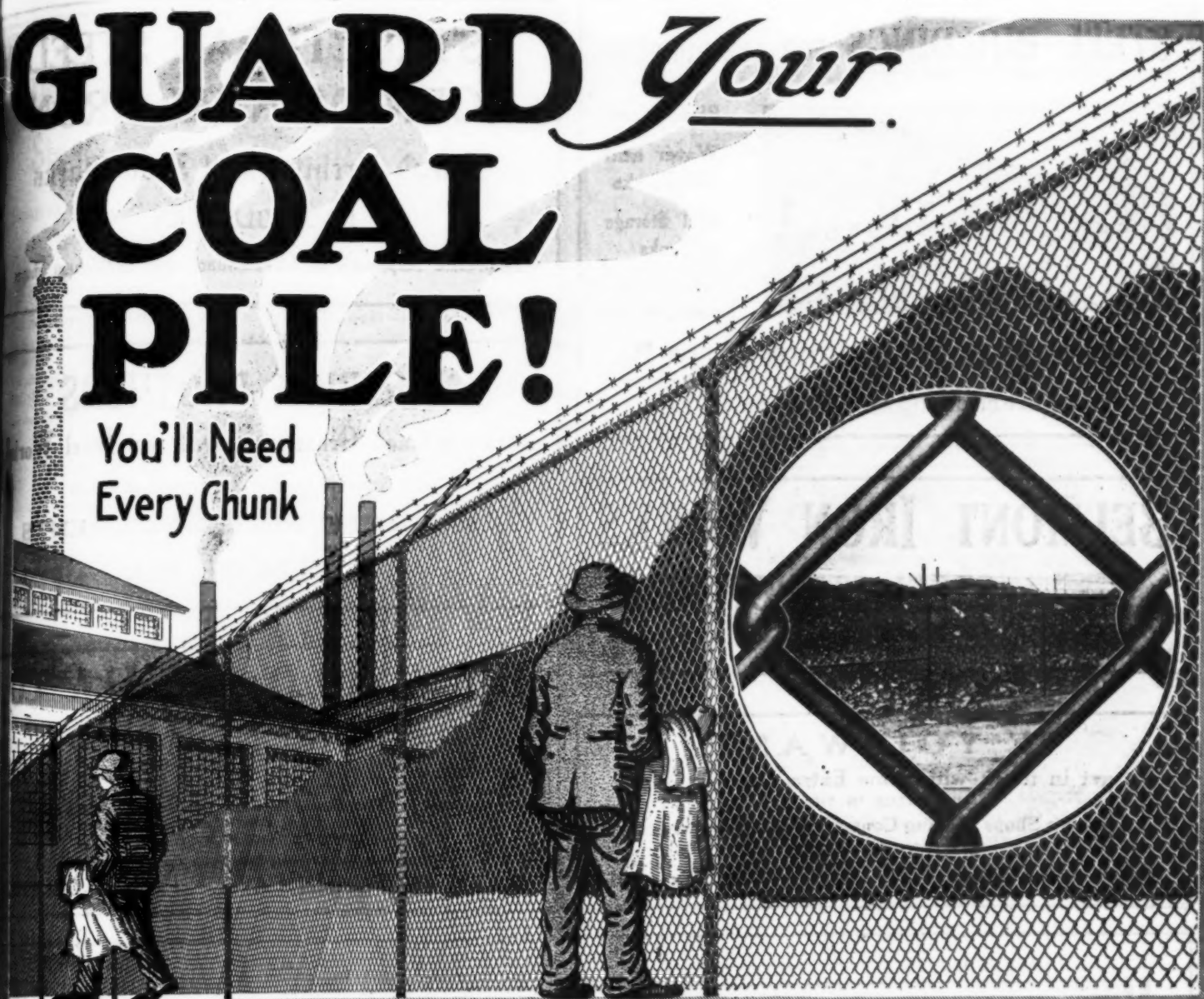
MONESSEN, PENNA.

Branches: New York, 30 Church Street; Pittsburgh, 644 Union Arcade; Detroit, 660 W. Fort St.; Chicago, 175 W. Jackson Boulevard.

Is Your Plant “PAGE PROTECTED”?

GUARD *Your* COAL PILE!

You'll Need
Every Chunk



Cyclone *Property Protection* Fence

A big coal pile, unprotected and easily accessible, is "public property"—in the eyes of many people. At least, it is an irresistible temptation to the "sack" and "basket" brigade whose daily and nightly raids amount to many tons in the course of a season.

Protect your plant against this heavy toll, against incendiarism, explosion, loss of tools and machinery parts—against depredations of every kind and for all time—by surrounding your factory property with Cyclone Property Protection Fencing.

Cyclone Fence is Man-Tight

Every link a "Seal of Safety" for your property. Owners of many leading industrial plants—Cyclone protected—declare their Cyclone Fence saved its cost the first year by stopping losses which could not be prevented before.

The recognized standard in wire fencing. Fabric of specially drawn, heavily galvanized, steel wire woven into chain link mesh—double brace in every link gives shock-resisting resiliency.

Heavy tubular steel posts offer stubborn resistance to strain. Three or five barb wires firmly locked in pressed steel post tops extend over side of fence—prevent climbing over.

Illustrated catalog showing many Cyclone Fence installations and giving full construction details sent free on request.

Our engineers are at your service without charge to help you solve your property protection problem.

We make quick response to your request for service. Phone, wire or write main offices at Waukegan, Ill., or nearest branch.

CYCLONE FENCE COMPANY

Factories: Waukegan, Ill. Cleveland, Ohio Waukegan, Illinois Branch Offices: Chicago, Philadelphia, Washington, New York, Oakland, Cal., Portland, Ore., San Francisco

STEEL BUILDINGS FOR ALL PURPOSES

Plate Work
Water and
Oil Tanks
Steel Storage
Tanks
Plant in the
Pittsburgh District

MEMPHIS STEEL CONSTRUCTION CO. OF PA.

MAGEE BUILDING

PITTSBURGH, PA.

BELMONT IRON WORKSDESIGN
FABRICATE
ERECT**STEEL STRUCTURES**N. Y. OFFICE:
32 BROADWAYMAIN OFFICE AND WORKS:
PHILADELPHIA, PA.BRIDGE SHOPS:
EDDYSTONE, PA.**IF YOU WANT**

To get in touch with some Extra Contract Work
ADVERTISE IN THE

Southern Shops Seeking Contract Work Department

RATES ON APPLICATION.

Manufacturers Record

Baltimore, Md.

**STRUCTURAL STEEL
ORNAMENTAL IRON****Snead Architectural Iron Works**

LOUISVILLE, KY.

Immediate Shipments of All Standard and Bethlehem Shapes

DIETRICH BROTHERS

Structural and Ornamental Iron and Steel Works

Large Stock of Standard and Bethlehem Shapes

CONCRETE REINFORCEMENTS

BALTIMORE, MD.

**THE HAROLD McCALLA CO.
IRON AND STEEL**

OF EVERY DESCRIPTION

Plain and Galvanized Bars, Hoops, Bands, Angles, Channels, Tees, Plates,
Sheets and Wire. Cut Nails, Plain and Galvanized; Wire Nails, Plain
Coated and Galvanized; Barb and Twisted Wire, Painted and
Galvanized. Hand Power Punches and Shears.

SHIPMENTS FROM STOCK OR MILL

Large Stock of Galvanized Bars, Bands, Hoops, Shapes, Etc.

444-446-448 Fairmount Ave.

PHILADELPHIA

AMERICAN BRIDGE COMPANY
HUDSON TERMINAL-30 CHURCH STREET, NEW YORK*Manufacturers of Steel Structures of all classes
particularly BRIDGES AND BUILDINGS***SALES OFFICES**

NEW YORK, N. Y.
Philadelphia, Pa.
Boston, Mass.
Baltimore, Md.
PITTSBURGH, PA.
Buffalo, N. Y.
Cincinnati, Ohio
Atlanta, Ga.
Cleveland, Ohio
Detroit, Mich.
CHICAGO, ILL.
St. Louis, Mo.
Denver, Colo.
Salt Lake City, Utah
Duluth, Minn.
Minneapolis, Minn.

30 Church Street
Widener Building
John Hancock Building
Continental Trust Building
Frick Building
Marine National Bank
Union Trust Building
Candler Building
Guardian Building
Beecher Ave. & M. C. R. R.
208 South La Salle Street
Third National Bank Building
First National Bank Building
Walker Bank Building
Wolvin Building
7th Ave. & 2nd St., S. E.

Pacific Coast Representative:

U. S. Steel Products Co.
SAN FRANCISCO, Cal.
Portland, Ore.
Seattle, Wash.

Pacific Coast Dept.
Rialto Building
Selling Building
4th Ave. So., Cor. Conn. St.

Export Representative:

United States Steel Products Co., 30 Church St., N. Y.



Union Arcade Bldg., Pittsburgh, Pa.

VIRGINIA BRIDGE & IRON CO.

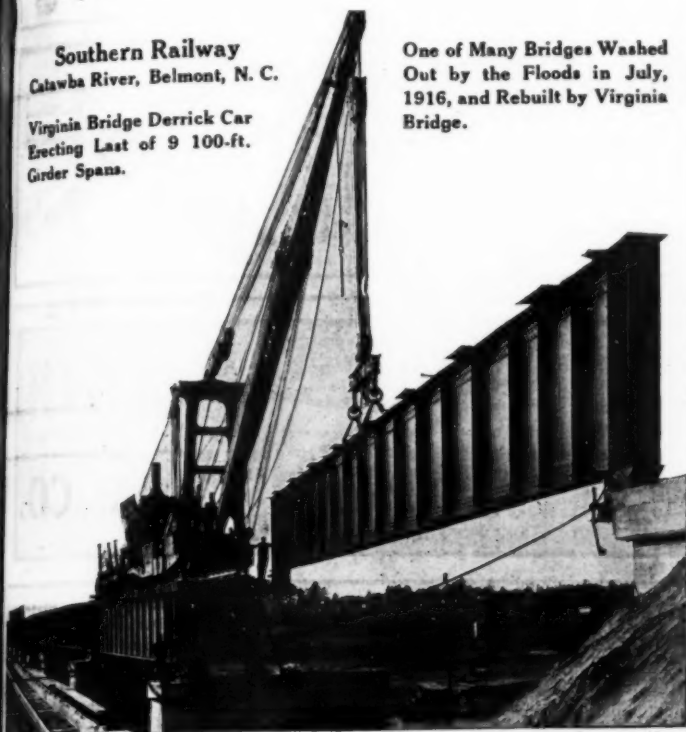
Steel Bridges, Buildings, Etc.

Roanoke Memphis Atlanta New Orleans
Denver Montgomery Charlotte

Southern Railway
Calawa River, Belmont, N. C.

Virginia Bridge Derrick Car
Erecting Last of 9 100-ft.
Girder Spans.

One of Many Bridges Washed
Out by the Floods in July,
1916, and Rebuilt by Virginia
Bridge.



CHESAPEAKE CRANES

Electric Traveling Cranes

Most Rugged Crane Built

QUICK DELIVERY

STEEL STRUCTURES

CHESAPEAKE IRON WORKS

BALTIMORE, MD.

THE ALABAMA COMPANY

BIRMINGHAM, ALA.

Manufacturers of Pig Iron

"CLIFTON" BRAND

Silicon 1% to 4%
Sulphur uniformly low.
Phosphorus 40% to .70%
Manganese 1% to 2%

An ideal iron for raw wheels
cylinder castings and all
high class work.

"ETOWAH" BRAND

Silicon 1% to 4%
Sulphur uniformly low.
Phosphorus 70% to 1%
Manganese 40% to .70%

A dependable iron for all
classes of foundry
work.

Producers of Foundry Coke and Smithing Coal

BROOKWOOD BRANDS

COKE

High Carbon, low Ash and low
Sulphur, good structure and
uniform quality.

SMITHING COAL

Washed and sized, low Sul-
phur and low Ash. For heavy
forge work is has no equal.

Let us have your inquiries

Structural
Steel
Shapes

THE PHOENIX IRON CO.

Works:
PHOENIXVILLE, PA.

Manufacturers of Open Hearth Steel

DESIGNS AND ESTIMATES FURNISHED

ST. LOUIS
Pierce Building

BALTIMORE
Con. Trust Building

Other {New York
Boston
Rochester

Buildings
Bridges
and other
Structures

VINCENNES BRIDGE CO.

BRIDGES, STRUCTURAL WORK
VINCENNES, IND.

Nashville, Tenn.

Address nearest office

Muskogee, Okla.

RICHMOND
STRUCTURAL
STEEL CO.

Design Manufacture Erect
STEEL and IRON
FOR BUILDINGS AND BRIDGES
Estimates Cheerfully Furnished
RICHMOND and NORFOLK, VA.

CHAMPION BRIDGE COMPANY

WILMINGTON, OHIO
MANUFACTURERS OF

Bridges and Structural Work

Southern Office—Atlanta, Ga.

Sleeper & Hartley, Inc., - Worcester, Mass.

WIRE SPRING COILING MACHINES

of every description, including UNIVERSAL COILERS in 8 sizes, handling
oil-tempered wire from .004" to 5/8" diam.

WIRE NAIL MACHINES

Smoothly running machines with balanced mechanical motions and no rotating
cams. Practically noiseless in operation. Built in 5 sizes—handling wire
from No. 18 to 3/8" diam.

ALLEGHENY STEEL COMPANY

Manufacturers of
STEEL AND CORROSION RESISTING ALLEGHENY IRON PLATES, SHEETS,
BOILER TUBES AND PIPE

Ask about Allegheny Iron

Oliver Building PITTSBURGH, PA.

Works: BRACKENRIDGE, PA.



O. H. FORGING BILLETS

MADE TO

SPECIAL ANALYSES

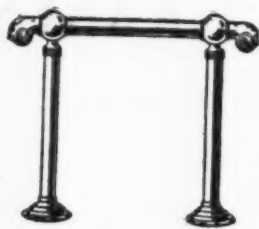
GENERAL OFFICES:

WIDENER BLDG., PHILADELPHIA

DISTRICT OFFICES:

NEW YORK BOSTON SAN FRANCISCO DALLAS

McKENNA — PITTSBURGH



RAILINGS
GRILLES
DOOR SADDLES
KICK PLATES
HAND ELEVATORS

Write for Catalog

THE FOUNDERS OF OUR COMPANY
BELIEVED IN FIRST "QUALITY" GOODS

A McKenna Manufactured Article
Is Known By Its "QUALITY"

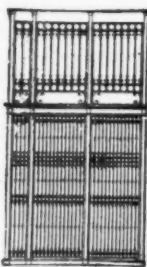
We Make a Specialty of

STRUCTURAL BRASS WORK OF
ALL KINDS FOR OFFICE BUILD-
INGS, THEATRES and CHURCHES

Our Quotations will interest you

McKenna Brass & Mfg. Co.
INC.

P. O. Drawer 1249 PITTSBURGH, PA.



WE MANUFACTURE

Bank and Office Railing
Wire and Iron Window Guards
Elevator Cars and Enclosures
Wire and Metal Signs

Stable Fixtures, Iron Fencing Iron, Stair Work
FIRE ESCAPES

Ornamental Wire, Iron, Steel, and Bronze Work

SEND FOR CATALOGUE

THE FRED. J. MEYERS MANUFACTURING CO.
HAMILTON, OHIO



Galvanized before woven

"The Perfect"

Hexagon

Poultry Netting

Made of selected steel wire. Uniform
in mesh and wire. Accurate in
length and width. In rolls, 150
feet long, all widths. Prompt
shipments.

Catalogue mailed on request.

The Ludlow-Saylor Wire Co.
ST. LOUIS, MO.

WIRE
NAILS



WIRE



BARBED
WIRE



STEEL
HOOPS



"ATLANTA" Open Hearth Steel Products Includes:
WIRE NAILS AND STAPLES, GALVANIZED WIRE, BRIGHT NAIL WIRE,
ANNEALED RAILING WIRE, GALVANIZED BARBED WIRE, HOOPS FOR
COOPERAGE & BALING PURPOSES, BARS FOR REINFORCING CONCRETE

We are manufacturers and are equipped to give you prompt service. We solicit your inquiries with specifications.

Atlantic Steel Company, Atlanta, Ga., U. S. A.
Cable Address, "Ascolanta, Atlanta, Ga."

HIRES TURNER GLASS COMPANY

Southern Headquarters—WASHINGTON, D. C.

Plate, Window,
Ornamental,
Beveled Plate

GLASS

Patent "All Glass"
Store Fronts
Solid Wire Glass
Skylight Glass

HEATING APPARATUS

THE HAMMOND HEATING CO.,

For Schools, Churches, Dwellings
and other buildings.
The Peck-Hammond Furnaces are
now controlled by us.

Cincinnati, Ohio



Brass Rails of every description
for Theatres, Banks,
Churches, Offices, etc.

LET US BID ON ALL

Brass and Bronze Work

Bank Fixtures, Hand Rails, Signs and
Tablets and Building Directories, Kick
Plates, etc.; Brass Grilles, Brass Frames,
Thresholds, Electro plated Work, Bronze Work.

INDUCING PRICES HIGH-CLASS WORKMANSHIP
Send Us List of Requirements Write for CATALOG

NEWMAN MFG. CO.

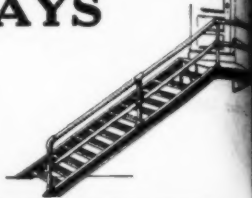
717 Sycamore St., CINCINNATI, OHIO
Established 1882 68 W. Washington St., CHICAGO, ILLINOIS

IRON STAIRWAYS

Marquis, Fire Escapes, Window Guards,
Railings, Metal Shingles. All kinds of
Ornamental and Builders' Iron Work.

Write for Estimates and Catalog
of complete line

Chattanooga Roofing & Foundry Co.
CHATTANOOGA, TENN.



"All Grades of Wire Cloth Made of All Kinds of Wire"

WIRE

TRADE JERSEY MARK

CLOTH

Wire Lath Wire Netting Wire Screening Wire Fencing Wire Weaving

OUR EXTENSIVE FACILITIES ENABLE US TO EXECUTE LARGE ORDERS PROMPTLY AT LOW PRICES

WOERLING WIRE USED IN ALL OUR PRODUCTS

THE NEW JERSEY WIRE CLOTH COMPANY

MAIN OFFICE, TRENTON, NEW JERSEY



Write for Catalogue M-27.

State your wants.

We are Manufacturers

BANK AND OFFICE RAILINGS

Plate and Ornamental Iron Work of all Descriptions

J. E. Bolles Iron & Wire Works

DETROIT MICH.

DUFUR, BAGGOTT & CO.

BRASS AND STEEL WIRE WORK OF EVERY DESCRIPTION

Absolute Prompt Delivery.

Bank Work Elevator Enclosures Elevator Cars Counter Railings Gals
Wickets Guards Partitions Skylight Protectors, Etc.

403 North Paca Street

BALTIMORE, MD.



Dufur & Co.

309 N HOWARD ST
BALTIMORE, MD.

MANUFACTURERS OF

IRON AND WIRE BANK WICKETS,
RAILINGS AND WINDOW GUARDS



The Cutler Mail Chute

A recognized necessity in modern buildings
of the office, hotel and apartment class.

Send for circulars and full information to the sole makers.

CUTLER MAIL CHUTE CO.

Rochester, N. Y.



NIAGARA GALVANIZED WALL PLUGS

For Building into Walls as a Base for Nailing. A first-class job can
be done with them for less money than an inferior job without them.

Ask for Folder 57-M. Mailed on Request.

S-78 **NIAGARA FALLS METAL STAMPING WORKS**
Hardware Specialties. Niagara Falls, New York, U. S. A.

WINDOW
PLATE
ART

RICHMOND, VA.

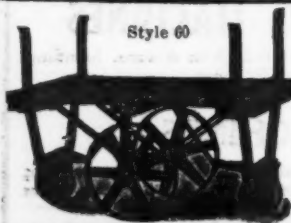
GLASS

BINSWANGER & Co.

MIRRORS
BEVELING
SKYLIGHT

MEMPHIS, TENN.

STORE FRONT CONSTRUCTION



Style 60

ROLLER BEARING

CARS and TRUCKS

OF ALL KINDS, FOR ALL PURPOSES
SWITCHES, TURNABLES

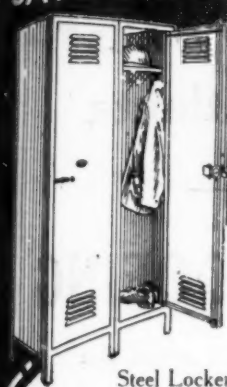
Complete Industrial Railway Equipment

Write for Catalogue and Prices

THE CHASE FOUNDRY & MFG. CO.

COLUMBUS, OHIO

EDWARDS STEEL LOCKERS SAVE EXPENSIVE SPACE



**FIRE-PROOF
DUST-PROOF
THIEF-PROOF**

**Ask
Your
Employees**

which they prefer—a dusty room without protection for wearing apparel, or a clean, fireproof steel locker. Then, space economy is also in favor of the

Steel Locker. Let us show you why the

EDWARDS STEEL LOCKER

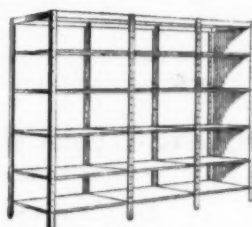
is a logical one for Factories, Stores, Offices, Gymnasiums, Schools, Colleges and Clubs, furnished complete. Beautifully finished in baked enamel. Standardized and readily adjusted. Economical in every way.

EDWARDS STEEL SHELVING

being instantly adjustable to any height, also offers you the solution of more working room. Furnished for any space required in both skeleton or bin types.

If you are crowded for room or are planning new quarters, let us show you the all-round economy in Steel Shelving and Lockers.

Send for Catalog and Estimates on Lockers and Shelving.



THE EDWARDS MANUFACTURING COMPANY

411-431 CULVERT STREET, CINCINNATI, OHIO

Metal Roofing--Metal Buildings--Metal Garages--Portable Buildings
Rolling Steel Doors--Partitions--Steel Trucks, etc.

"Van Dorn"

Joist Hangers and Post Caps

OFFER

Assured Carrying Capacities

Attested by



PROOF OF QUALITY IS IN DETAILS

Get our Catalogue No. 82

MANUFACTURERS OF

Steel Prison Work -- Metallic Furniture

Structural and Ornamental Iron

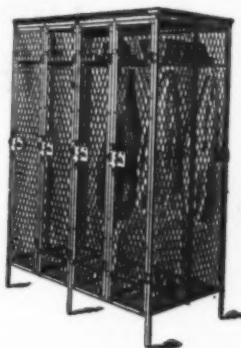
Iron Fencing

Joist Hangers and Post Caps

The Van Dorn Iron Works Co., Cleveland, O.

METAL LOCKERS OF EVERY DESCRIPTION

Steel Equipments for Hotels, Restaurants, Hospitals, Clubs, R. R. Offices, Yachts & Ships



Machine Guards
Steel Kitchen Shelving
Steel Linen Closet Shelving
Plate Warmers
Silver Cabinets
Kitchen Bins
Vegetable Lockers
Mess Lockers
Wire Mesh for Ships

Ornamental Iron Works
Brass Work
Elevator Enclosures
Collapsing Gates
Auto Tire Racks
Bank Vault Boxes
Steel Specialties
Window Guards

STEEL SHELVING

DEXTER METAL MFG. CO.

Successors to MERRITT & CO.

CAMDEN, N. J.

WM. A. PARENT, General Manager

MEDART STEEL LOCKERS

For factories, foundries, coal mines and all industrial institutions.

Write for catalog "A-5"

FRED MEDART MFG. CO.

St. Louis, Mo.

MAPLE

FLOORING

OAK

COTTON MILLS

PUBLIC BUILDINGS

Kiln Dried

End Matched

Hollow Backed

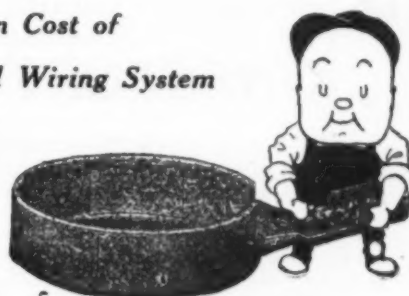
Manufactured by WILLIAM S. WHITING, Elizabethton, Tenn.

Lowest Installation Cost of

any Metal Wiring System

No. 222

**Two-Wire
Metal Molding**



is connected to the base of a Device by means of a Bushing—No. 277—the design of which eliminates the necessity of using screws. Nat is showing you the first step in making this connection. Having removed the twist-out, he has inserted the tongue of the base of the bushing into slot in the base of the Device, and is pushing the base of the Bushing into place. No. 279 Bushing, for connecting No. 333 Molding to these bases, is used in the same manner.

On your next job refer to your Bulletin 101 and place your order with your jobber.

National Metal Molding Co.

1117 FULTON BUILDING
PITTSBURGH

Atlanta
Boston
Buffalo
Buenos Aires

Chicago
Dallas
Denver
Detroit

Havana
Los Angeles
Manila
New York

Paris
Philadelphia
Portland
Rio de Janeiro

Salt Lake City
San Francisco
Seattle
St. Louis

CANADIAN DISTRIBUTORS—CANADIAN GENERAL ELECTRIC COMPANY, LIMITED

*Healey Building
Atlanta
Ga.*



The Floor and Partition Walls of the Healey Building, Atlanta

— are —

CLAY FIREPROOFING

furnished by us. And here's what the
Contractor says:

"Referring to your contract for the delivery of approximately 5,000 tons of Clay Fireproofing for the construction of the Healey Building, you have handled this contract to my complete satisfaction. The material you furnished has been of good quality. You have shipped material promptly when ordered. Your dealings have been fair, and our business relations have been pleasant.

I can take pleasure in recommending you to any person needing similar material."

OCONEE BRICK & TILE COMPANY MILLEDGEVILLE, GA.

*Manufacturers of Hollow Tile, Flue Linings,
Sewer Pipe, Silo Blocks, Fire Clay, Etc.*

The Beautiful Blended Tones of **KINGSPORT** Vari-Colored Texture Brick

Are obtained solely by scientifically burning the wonderful clays in our deposits in East Tennessee. No chemicals or foreign ingredients are used whatever.

The wide range of color tones blend harmoniously and give the finished structure a distinctive individuality that enhances the value and salability of the building.

*Write for samples and prices
Before selecting your brick.*

Kingsport Brick Corporation
General Offices KINGSFORT, TENN.

AMERICAN ENAMELED BRICK & TILE COMPANY

"Manufacturers of Enameled and Fire Brick"

Highest Quality

Prices and samples submitted upon request.

American Enameled Brick & Tile Co.
52 Vanderbilt Avenue New York

WHEN QUALITY COMES FIRST

VA-TEX Selected Wire Cut Texture Brick

Write us for details—we make all grades of brick

GLASGOW CLAY PRODUCTS COMPANY, 120 Broadway, NEW YORK
Phone, Rector 6664 Works: Glasgow, Virginia

Brookhaven Pressed Brick & Mfg. Co. Brookhaven, Miss.
ALL COLORS **FINEST FACE BRICK** PRICES MADE TO ORDER

BRICKS—TILES—FIREPLACES
Every Kind—Impervious—Special Designs
B. MIFFLIN HOOD BRICK CO. Atlanta, Ga.

Red and Buff Dry Pressed Brick, Common Building Brick
GEORGIA-CAROLINA BRICK CO. AUGUSTA, GA.
HOWARD H. STAFFORD, Pres.

Eclipse Mortar Colors

Our Mortar Colors (red, brown, buff and black) are the strongest and most economical on the market. They will do twice the service of other Mortar Colors. We also manufacture coloring for sand-lime bricks and cement blocks, and are shipping it all over the country.

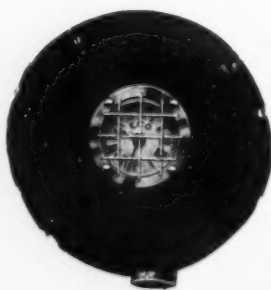
Write for samples and quotations.

Chattanooga Paint Co.

Chattanooga, Tenn.

P E A C E

of mind is impossible in these times unless your office, plant or factory is protected at all times. In the wee small hours of the morning is your plant being properly watched? Is your watchman always on the job? Install a



WATCHMAN CLOCK SYSTEM

and know that your watchman is being watched. The Eco Watchman Clock is an exclusive specialized product of thirty-six years standing.

ECO CLOCK CO.

197 Congress Street BOSTON MASS.
26 Cortlandt Street NEW YORK, N. Y.

Scale Repairing

The repairing of scales is one part of the service which The Standard Scale & Supply Co. extends to Scale users.

Scales of all makes, styles and capacities repaired.

We employ a large force of expert Scale Mechanics, and our experience as scale manufacturers puts us in position to render first class Scale Repair service.

If your scales need repairing, write, call or wire

THE STANDARD SCALE & SUPPLY COMPANY

409 North Gay Street BALTIMORE, MD.

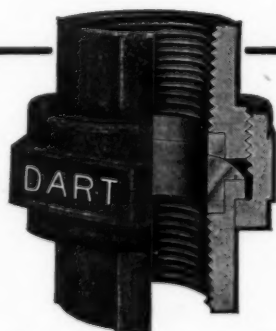
DART UNIONS

Have Bronze to Bronze at the Joint—No Corrosion

This construction is embodied in our Flange Elbow, Tee, Male and Female and Air Pump Unions. Dart Union can be used under any pressure your pipes will stand. We stand back of every Dart Union — return one to us proving defective and we will replace by two

Ask for circular and sample

Ask your dealer for prices



The Fairbanks Co., Agents.

Canadian Factory: Dart Union Co., Ltd., Toronto.

E. M. DART MFG. CO. PROVIDENCE, R. I.

Used for Years

LAPIDOLITH

TRADE MARK

For All Concrete Floors

Stop Dust!

Stop Wear!

Stop Expense!

Lapidolith, the liquid chemical, will make your concrete floors as hard as granite whether they are old or new.

Just flush it on!

Lapidolized floors are dust-proof, wearproof and waterproof.

Lapidolized floors are now found in every city of every State. Testimonials from leaders in every line prove that you should investigate Lapidolith.

Write for free sample and all the facts—practical and scientific.

Department 23

L. Sonneborn Sons, Inc.

Manufacturers of Cemcoat, the Washable Wall Coating.

264 Pearl Street

New York

Used for Years



Speeding the Liberty Planes

Lupton

INVESTMENT VALUE

When the makers of the Delco Light consulted us about their great new factory we might have said, "Use a sawtooth or a series of monitors."

But we knew that no ordinary roof would ventilate so wide a building; also that a wide sawtooth gives unsatisfactory lighting.

We recommended the Pond Truss roof here shown. It was cheaper than a sawtooth. It required less sash. It gives abundant, ideally-distributed light "like working under a tree." And it gives *real* ventilation, rain or shine.

That factory is now used by the Dayton-Wright Airplane Co. They have other buildings; but all the most responsible Wright product is made under Pond Trusses, protected with top-hung, motor-operated Pond Continuous Sash.

The Pond Truss was invented to aid our customers to get 100 per cent. service from Pond Continuous Sash. It has set a new standard for lighting and ventilating performance in nearly a hundred buildings.

Ask our Service Department.

DAVID LUPTON'S SONS COMPANY

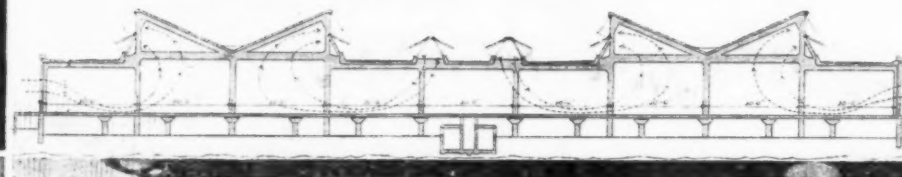
Agate and Tulip Streets.

Philadelphia, Pa.

Makers of modern equipment for daylighting and natural ventilation

Pond
CONTINUOUS SASH
PATENTED
WEATHER-PROOF WHEN OPEN

is made in 20 ft. units, joined by expansion caps into lines of any length. It is top-hung, with storm panels at the ends, hence excludes any ordinary rain. Exclusive patented features give unusual strength and resistance to corrosion.





BONANZA

Cement Tile Roofing

Combines Permanency with Fine Appearance

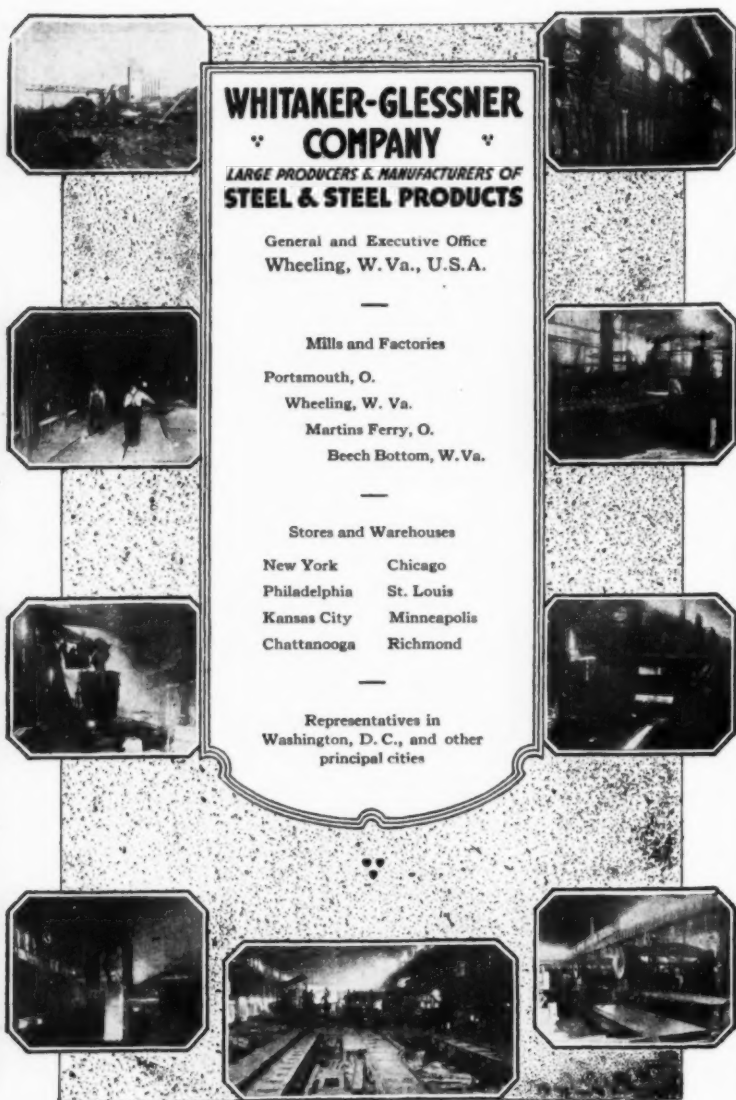
Note the even, uniform lines, the attractiveness and graceful appearance. Add to this its rapidity of laying, its waterproof, fireproof and weatherproof qualities, the fact that it never requires painting or repairs, and you will have some of the reasons why the Bullard Machine Tool Company, of Fairfield, Conn., chose BONANZA CEMENT TILE—why it should be on your buildings.

Our wide experience in laying roofs, for we lay the tile ourselves, insures the correct result in your particular case. The above shows the red interlocking tile. Other styles include flat tile construction and our glass skylight tile which replaces or supplements monitor lighting.

Write for data book with 45 pages of working details.

American Cement Tile Mfg. Co.
2223 Oliver Bldg., Pittsburgh, Pa.
New York Office: 50 Church St.
Philadelphia Cleveland Birmingham

The Roof Tested Tried and True



WHITAKER-GLESSNER COMPANY
 LARGE PRODUCERS & MANUFACTURERS OF
STEEL & STEEL PRODUCTS

General and Executive Office
 Wheeling, W. Va., U.S.A.

—

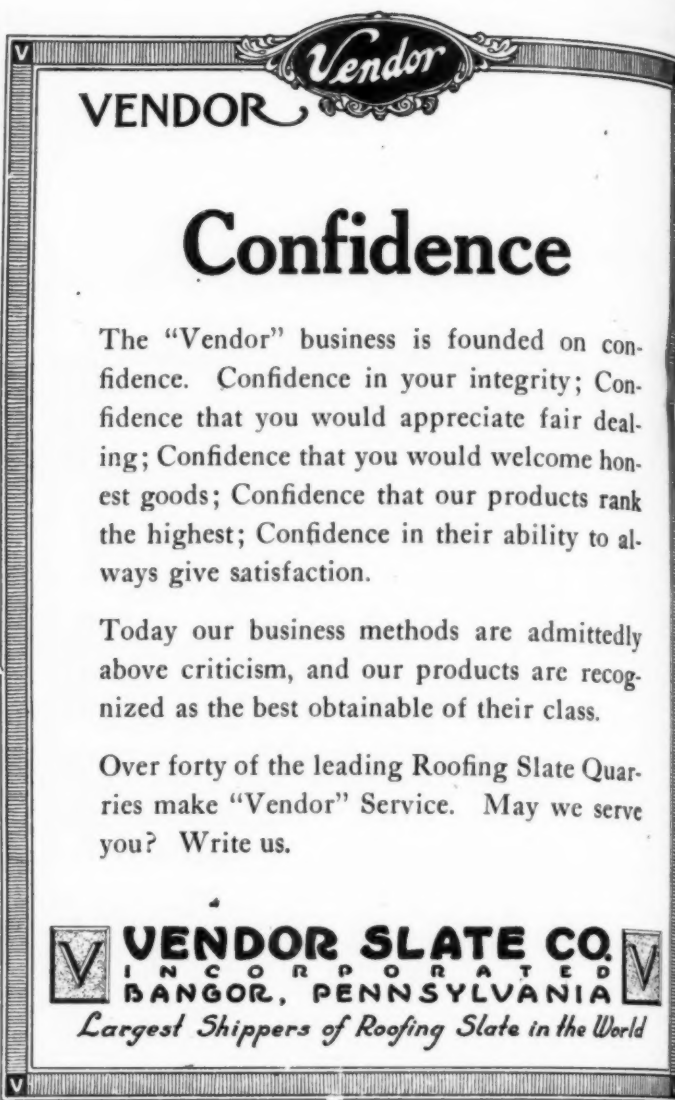
Mills and Factories
 Portsmouth, O.
 Wheeling, W. Va.
 Martins Ferry, O.
 Beech Bottom, W. Va.

—

Stores and Warehouses
 New York Chicago
 Philadelphia St. Louis
 Kansas City Minneapolis
 Chattanooga Richmond

—

Representatives in
 Washington, D. C., and other
 principal cities



VENDOR

Confidence

The "Vendor" business is founded on confidence. Confidence in your integrity; Confidence that you would appreciate fair dealing; Confidence that you would welcome honest goods; Confidence that our products rank the highest; Confidence in their ability to always give satisfaction.

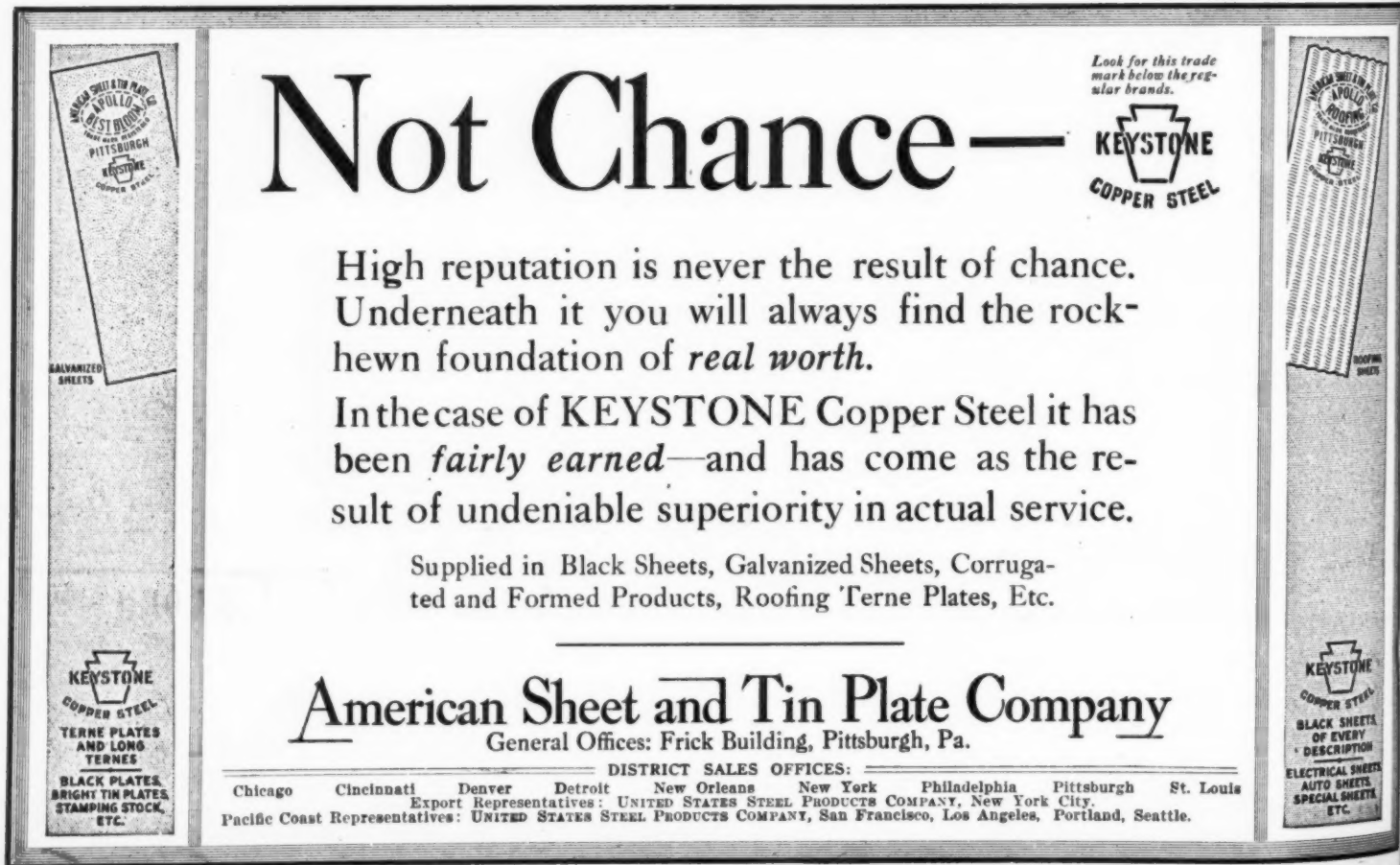
Today our business methods are admittedly above criticism, and our products are recognized as the best obtainable of their class.

Over forty of the leading Roofing Slate Quarries make "Vendor" Service. May we serve you? Write us.

VENDOR SLATE CO.
 INCORPORATED
 BANGOR, PENNSYLVANIA
Largest Shippers of Roofing Slate in the World

IMPERIAL ROOFING TILES
 MADE BY
LUDOWICI-CELADON COMPANY
 Write for Literature and Prices
 GENERAL OFFICES - Monroe Building - CHICAGO, ILL.

TIN PAINTED METAL SHINGLES GALVANIZED
 With Improved "Lock That Locks." Watertight—Fireproof—Durable—Economical
 Best and Cheapest Made by
The Hyndman Roofing Co. Cincinnati, Ohio



Not Chance—

High reputation is never the result of chance. Underneath it you will always find the rock-hewn foundation of *real worth*.

In the case of **KEYSTONE Copper Steel** it has been *fairly earned*—and has come as the result of undeniable superiority in actual service.

Supplied in Black Sheets, Galvanized Sheets, Corrugated and Formed Products, Roofing Terne Plates, Etc.

American Sheet and Tin Plate Company
 General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:
 Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
 Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City.
 Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle.

Look for this trade mark below the regular brands.

KEYSTONE COPPER STEEL

AMERICAN SHEET AND TIN PLATE CO.
 PITTSBURGH
 KEYSTONE COPPER STEEL

KEYSTONE COPPER STEEL
 BLACK SHEETS OF EVERY DESCRIPTION
 ELECTRICAL SHEETS
 AUTO SHEETS
 SPECIAL SHEETS ETC.



The World's Standard for Zinc Products

Zinc Dust

THE requisite qualities for a Zinc Dust used in dyeing are high content of zinc, brightness, uniformity and fineness.

New Jersey Zinc Dust averages from 93 to 95% metallic zinc, its surfaces are exceptionally bright and over 95% will pass through a 350 mesh screen.

New Jersey Zinc Dust is a reliable, standard product that can be depended upon to liberate nascent hydrogen promptly and uniformly.

THE NEW JERSEY ZINC COMPANY

55 Wall Street, New York

ESTABLISHED 1848

Chicago: Mineral Point Zinc Company, 1111 Marquette Building

Hundreds of America's Leading Industries are Adopting

GROUP INSURANCE

Because they find—

It binds their employees closer to them.

It quiets labor unrest and reduces labor turnover.

It instills greater loyalty and efficiency.

THOMAS & THOMAS

HOME OFFICE REPRESENTATIVES

Aetna Life Insurance Company of Hartford, Conn.

S. W. Cor. Calvert and German Streets (2nd Floor), Baltimore, Md.

Healey Building, Atlanta, Ga.

Asbestos Protected Metal Roofing and Siding

For permanent industrial buildings of all classes. Economical—Low maintenance. Permanent without paint under the most severe conditions of service.

Ask for Bulletin 557.

Aspromet Company
Pittsburgh, U.S.A.

IT IS TIME TO THINK ABOUT

A tight roof on home and barn for the coming winter.

CORTRIGHT METAL SHINGLES

Give permanent protection against the elements—and they're fireproof. We have stock on hand and can make prompt shipment of all styles—Red Painted Tin, Green Painted Tin, Galvanized Tight Coat and Galvanized Tin.

Act now while weather conditions are favorable.

CORTRIGHT METAL ROOFING CO.

PHILADELPHIA

PENNA.



BIRMINGHAM SLAG COMPANY

BIRMINGHAM

Jefferson County Bank Building

ALABAMA

—Write US About—

Crushed and Sized "BASIC" Slag

ROAD BUILDING

REINFORCED CONCRETE CONSTRUCTION

ROOFING

Asher Fire Proofing Co.

Southern Building,

Washington, D. C.

Hollow Tile Sewer Pipe Drain Tile

We make a specialty of Hollow Tile for Dry Kilns.

We do Hollow Tile and Reinforced Concrete Construction.

WELLD RILLING

PAYS BIG MONEY

Own a machine of your own on easy terms.

Many styles and sizes for all purposes.

Write for Circular

WILLIAMS BROS.

426 W. State St.

ITHACA, N. Y.

JOHNS-MANVILLE Mastic Flooring

—for the overworked floor
in the wartime plant

UNDER conditions where hard usage and accidents make occasional repairs necessary—Johns-Manville Mastic Flooring offers another advantage and again proves its superiority.

Mastic Flooring is easily repaired. Just cut out the worn or damaged section. Reheat this same material with a small amount of flux, which we furnish, then relay. The new spot—floated and rubbed down to the proper level—is immediately one piece, and has all the characteristic qualities of the surrounding floor.

Extremely tough and durable under ordinary service Johns-Manville Mastic is practically wear-proof, and under abnormally severe usage its maintenance cost is a minimum.

H. W. JOHNS-MANVILLE CO.

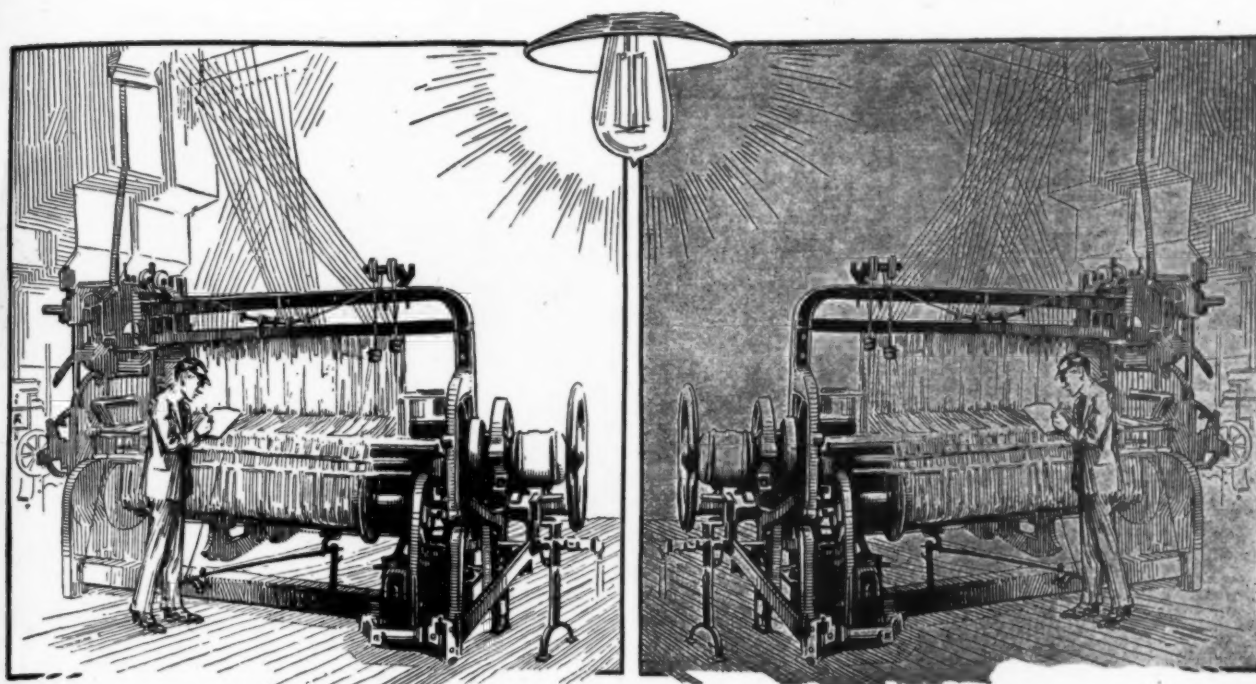
New York City

10 Factories—Branches in 63 Large Cities

Mastic Flooring
in casting room of
De La Vergne Machine
Co., New York City.

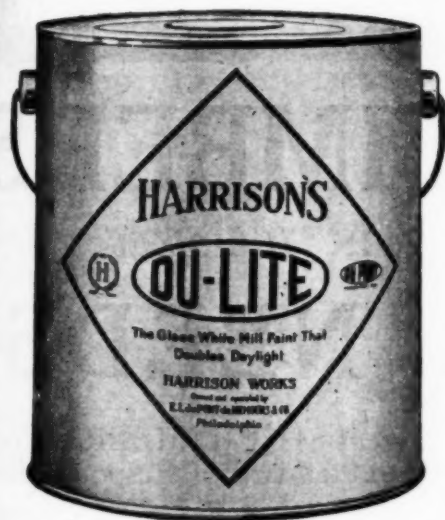


DU PONT AMERICAN INDUSTRIES



DU-LITE Doubles Daylight In Your Factory

Would you work there yourself? If you had to work under the conditions shown in the picture at the right, where the light is always poor, and yet speed and accuracy are demanded?



It is both patriotic and good business to get the maximum possible production from your factory. You can keep your production at top notch, and at the same time keep workers happy by painting the walls of your mill, factory, office or ship with Du-Lite. It will accomplish these results:

- Save coal.
- Speed up production.
- Lengthen the usable hours of daylight.
- Decrease accidents.
- Insure accuracy of inspection.

The price in barrels is very interesting. We will gladly quote you on your requirements, or you may send us blue-prints of your office or factory, and we will do the figuring for you without obligation. Du-Lite goes on brick, tile, wood, plaster or concrete, and *stays* on, and *stays* white.

HARRISON WORKS

Owned and Operated by

E. I. du Pont de Nemours & Co. Wilmington, Del.

Boston New York Chicago Minneapolis Kansas City
THE DU PONT AMERICAN INDUSTRIES ARE:

Harrison Works, owned and operated by E. I. du Pont de Nemours & Company, 3505 Gray's Ferry Road, Philadelphia, Pa.

E. I. du Pont de Nemours & Co., Wilmington, Del., Explosives.
Du Pont Chemical Works, New York, N. Y., Pyroxylin and Coal Tar Chemicals.

Du Pont Fabrikoid Co., Wilmington, Del., Leather Substitutes.
The Arlington Works, 725 Broadway, New York, Ivory Py-ra-lin and Challenge Collars.

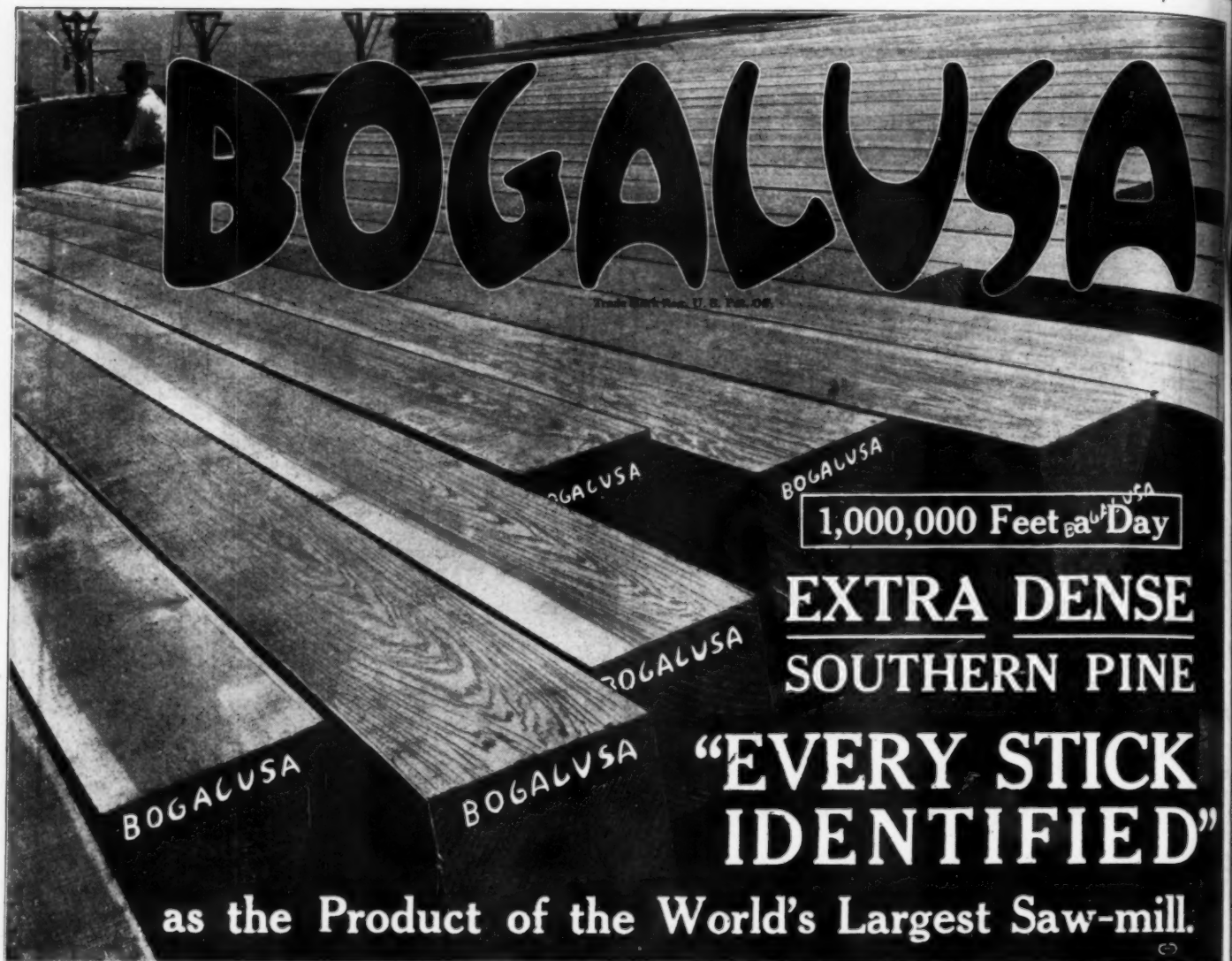
Du Pont Dye Works, Wilmington, Del., Dyes and Dye Bases.
"Visit the Du Pont Products Store when you are in Atlantic City."

H.P. 369

MAIL THIS COUPON to Harrison Works, Advertising Division, Wilmington, Del., Marking X Before Subject That Interests You and Write Address in Margin.

- | | |
|---|---|
| <input type="checkbox"/> Du-Lite | <input type="checkbox"/> Challenge Collars |
| <input type="checkbox"/> Antoxide | <input type="checkbox"/> Rayntite Top Mat'l |
| <input type="checkbox"/> Red Lead | <input type="checkbox"/> Craftsman Fabrikoid |
| <input type="checkbox"/> Ship-Bottom Paint | <input type="checkbox"/> Fairfield Cloth |
| <input type="checkbox"/> Industrial Varnishes | <input type="checkbox"/> Anaesthesia Ether |
| <input type="checkbox"/> Town and Country Paint | <input type="checkbox"/> Leather Solutions |
| <input type="checkbox"/> Vitrolac Varnish | <input type="checkbox"/> Metal Lacquers |
| <input type="checkbox"/> Flowkote Enamel | <input type="checkbox"/> Bronzing Powders |
| <input type="checkbox"/> Auto Enamel | <input type="checkbox"/> Commercial Acids |
| <input type="checkbox"/> Farm Explosives | <input type="checkbox"/> Alums |
| <input type="checkbox"/> Sporting Powders | <input type="checkbox"/> Saltpetre |
| <input type="checkbox"/> Blasting Supplies | <input type="checkbox"/> Wood Pulp |
| <input type="checkbox"/> Blasting Powders | <input type="checkbox"/> Tar Distillates |
| <input type="checkbox"/> High Explosives | <input type="checkbox"/> Py-ra-lin Toilet Goods |

DU PONT



BOGALUSA

1,000,000 Feet ^{per} Day

**EXTRA DENSE
SOUTHERN PINE**

**"EVERY STICK
IDENTIFIED"**

as the Product of the World's Largest Saw-mill.

STRUCTURAL TIMBERS

AND SUPERIOR LONG-LEAF PINE LUMBER IN *ALL SIZES*

FOR WAR-TIME NEEDS.

From a lath in the new home of the patriotic workman to the great SHIP-TIMBERS of our country's new Merchant Marine, "BOGALUSA" is the American Standard of Responsibility.

"BOGALUSA," stamped on your shipment, is the symbol of EXTRA DENSE TIMBER, Masterful Manufacture, Scrupulous Count ("every foot a foot") and Rigid Grading—at the mill—to meet the very exacting specifications of the FACTORY MUTUALS, the AMERICAN SOCIETY FOR TESTING MATERIALS, the AMERICAN RAILWAY ENGINEERING ASSOCIATION and the SOUTHERN PINE ASSOCIATION.

**"Specify
Bogalusa
for
Safety's
Sake."**



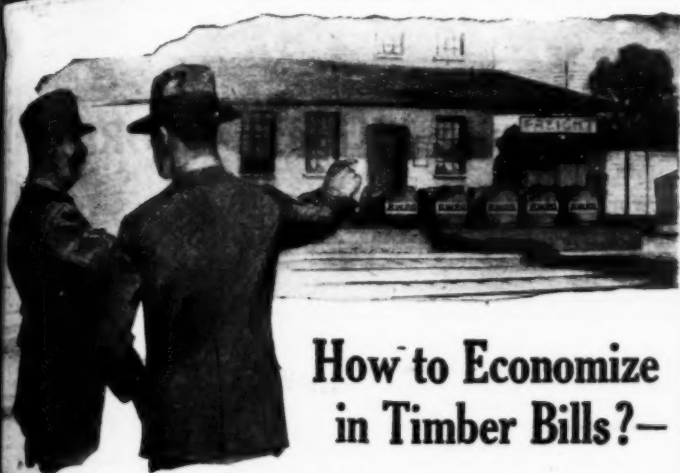
Let Us Quote on Your Requirements.

THE **BOGALUSA BOOK** IS FULL OF VALUABLE DATA AND PINE STATISTICS. IT'S AUTHORITATIVE. IT'S FREE ON REQUEST.



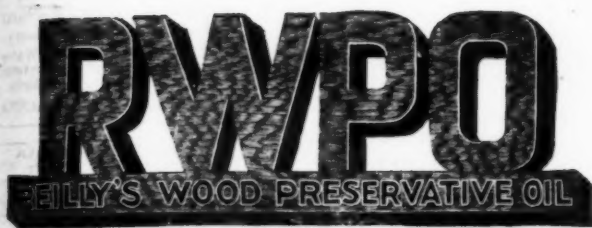
**"Specify
Bogalusa
for
Safety's
Sake."**

GREAT SOUTHERN Lumber Co., 1621 Fourth Ave., BOGALUSA, La.



**How to Economize
in Timber Bills?—**

USE



PATENTED

THE sky-high cost of big timbers for construction purposes above and below the ground should not cause you any worry.

You can force this high initial cost down to a very nominal final cost by using **R. W. P. O.**—the most effective wood preservative known.

Timbers treated with **R. W. P. O.** outlast several sets of untreated timbers.

R. W. P. O. is a water and decay-proof oil, which penetrates deeply into the surface of the timber, filling the cells and preserving the fiber. Does not evaporate or dissolve. Fortifies wood against every known destroying agent.

In the construction game **R. W. P. O.** is a big factor for practical economy.

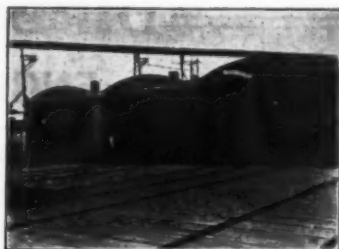
Write us for full particulars

Republic Creosoting Company

Indianapolis, Indiana

Plants: Indianapolis Minneapolis Mobile Seattle Norfolk

MOORE'S MOIST AIR DRY KILNS



Will dry all kinds of Lumber
Satisfactorily

We have been building Kilns in
the South for 40 years.

*Let us send you a Copy of our
new Catalog.*

Moore Dry Kiln Co.

1035 Blanche Street Jacksonville, Fla.

CREOSOTE WORKS TREATING PLANT

PENSACOLA, FLA.

PAVING BLOCKS, BRIDGE TIMBERS, CROSS
TIES, CROSS ARMS, PILING AND POLES

SOUTHERN PAVING CONSTRUCTION CO., GENERAL OFFICE: CHATTANOOGA, TENN.

CREOSOTED MATERIALS CO., INC.

301 QUEEN & CRESCENT BLDG.

NEW ORLEANS, LA.

DOMESTIC

EXPORT

AMERICAN CREOSOTE WORKS, NEW ORLEANS, LA.

STATION B

(INCORPORATED)

Creosoted Cross-Arms, Lumber, Paving Blocks, Piles, Poles and Ties

Private free wharf for ocean vessels Capacity 100 million feet board measure
at New Orleans. annually.

Western Union and A. B. C. 5th Edition Codes. Plant at Louisville, Miss.



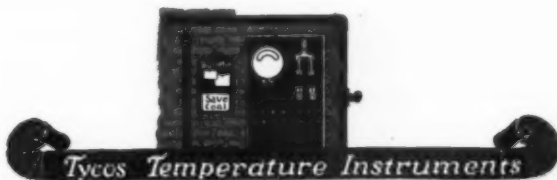
SOUTHERN WOOD PRESERVING CO.

Creosoted Conduit, Cross Arms, Cross Ties
Poles, Piling and Timber

CHICAGO SALES OFFICE

208 So. La Salle St., Room 623

ATLANTA



Tycos Temperature Instruments

Mercurial, Recording
and Index Thermom-
eters for all indus-
trial and laboratory
applications.
Electric Contact Ther-
mometers.
Temperature Pressure
and Time Regulators.
Mercury Column Vac-
uum Pressure and
U Gauges.
Base Metal, Base Met-
al and Radiation
Pyrometers.
Ferry Radiation Pyrom-
eters.
Hygrometers.
Hydrometers.
Mineral Oil Testing In-
struments.

Aeroid Barometers.
Mercurial Barometers.
Recording Barometers.
Pocket Compasses.
Surveying Compasses.
Rain Gauges.
Anemometers.
Air Meters.
Thermographs.
Hand Levels.
Aviation Barometers.
Inclinometers.
Sphygmomanometers.
Fever Thermometers.
Urinary Glassware.
Thermometers of all
kinds for home and
general use.

THAT manufacturer
expecting much
through the installation
of indicating, recording
and controlling Tem-
perature Instruments
will realize in full such
expectations and derive
profit—if he specifies
Tycos products.

*We shall be glad to give detailed descrip-
tion of any of our temperature
instruments.*

Taylor Instrument Companies
Rochester, N. Y.

*There's a Tycos and Taylor Thermometer
for every purpose.*

ARCHITECTS ENGINEERS CONTRACTORS

Detailed classification of specialized work undertaken by those having cards in this Directory will be found in Classified Index.

MILBURN, HEISTER & CO.

Architects

WASHINGTON, D. C.

THE ARNOLD COMPANY

Engineers—Constructors

Electrical—Civil—Mechanical

136 South La Salle St CHICAGO

J. M. CLARK, Mem. A. I. M. E.
C. E. KREBS, Mem. A. I. M. E.
G. R. KREBS J. W. MORGAN

CLARK & KREBS

Civil and Mining Engineers and Geologists
Coal, Oil, and Gas
Railroad and Municipal Engineering
CHARLESTON, W. VA.

DOW & SMITH

Chemical Engineers Consulting Paving Engineers

A. W. Dow, Ph.D. F. P. Smith, Ph.D.

Mem. Am. Inst. Ch. Engrs. Mem. Am. Soc. Civ. Engrs.

Asphalt, Bitumens, Paving, Hydraulic, Engineering Materials

131-3 E. 23d Street NEW YORK

Government Landscape Architect—1910-1916.

GEORGE BURNAP
Landscape Architect
Washington, D. C.

PARKS SUBDIVISIONS ESTATES

DAY & ZIMMERMANN, Inc.

Engineers

Layout, Design and Construction of Industrial Plants and Public Service Properties, Examinations, Reports and Valuations, Highway Engineering, Operation of Public Service Properties.

PHILADELPHIA.

W. E. MOORE & COMPANY

Engineers

Reports, Designs, Supervision, Public Service Properties, Power Developments, Distribution and Application.

Union Bank Bldg. PITTSBURGH, PA.

B. M. HALL & SONS

(Successors to Hall Brothers)

Civil and Mining Engineers

Mines, Quarries, Hydraulics, Water Supply, Water-Power, Dams, Reservoirs, Tunnels, Drainage, Appraisals.

Peters Building, ATLANTA, GA.

HUGH L. COOPER & CO.

General Hydraulic Engineering

Including the Design, Financing, Construction and Management of Hydro-Electric Power Plants.

101 Park Avenue NEW YORK

WALTER A. ALLISON

Consulting Engineer

Specialist in the design, construction and supervision of Gas Properties.

Reports, Appraisals, Rate Development.

403 Winter Street. PHILADELPHIA

HEDRICK & HEDRICK
Consulting Engineers
Bridges, Viaducts and other Structures
Steel and Reinforced Concrete.
Interstate Building, KANSAS CITY, MO.

FREELAND KLYCE ENG'G CO.
Consulting Engineers
Concrete and Steel Structures
NASHVILLE, TENN.

DANIEL B. LUTEN

Designing and Consulting Engineer

Reinforced Concrete Bridges exclusively.
Associate Engineers in each State.

INDIANAPOLIS, IND.

BLACK & VEATCH

Consulting Engineers

Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations and Reports.

E. B. Black, N. T. Veatch, Jr.
KANSAS CITY, MO., Inter-State Bldg.

CHARLES T. MAIN

Member A. S. M. E.

Textile Mills

WATER-POWER DEVELOPMENTS

201 Devonshire Street BOSTON

Concrete-Steel Engineering Co.

Designing and Supervising Engineers

Concrete-Steel Bridges

Concrete-Steel Tanks

Park Row Bldg. NEW YORK.

GILBERT C. WHITE, C. E.

M. Am. Soc. C. E.

M. Am. W. W. Assoc.

Consulting Engineer

Water-Works Streets
DURHAM, N. C.

C. L. BROOKS ENGINEERING CO

Packing-House and Cold-Storage Engineers

We help you raise the capital, build the plant and run it successfully. We make a specialty of Southern plants.

Main Office—MOULTREE, GA.

MINNEAPOLIS, MINN. ATLANTA, GA.

736 Plymouth Bldg. 711 Empire Bldg.

Dixie Engineering & Insulating Co.

Design and equip Milk, Ice-Cream, Cold-storage and Packing Plants. Conveyor Equipment for all kinds of Industrial Plants.

ATLANTA, GA.

RICHARD K. MEADE & CO

Chemical and Industrial Engineers and Contractors.

Chemical, Cement, Lime, Fertilizer, Stone Crushing and Agricultural Limestone Plants Designed, Built, Improved and Operated. Reports on Industrial Propositions. Technical Research.

LAW BUILDING, BALTIMORE, MD.

F. EARNEST BRACKETT

Civil and Mining Engineer

Coal Mines, Water Works, Sewerage, Industrial Plants, Surveys and Reports.
Third National Bank Bldg. Cumberland, Md.

MORRIS KNOWLES

M. Am. Soc. C. E. Mem. Am. Soc. M. E.

Hydraulic and Sanitary Engineer

Investigations and Valuations for Purchase or Financing Water and Sewer Systems, Water Power, Drainage and Irrigation Systems.

1200 B. F. Jones Law Bldg. PITTSBURGH, PA.

MARTIN J. LIDE

Consulting and Constructing Electrical and Mechanical Engineer

BIRMINGHAM, ALA.

WILEY & WILSON

Consulting Engineers

Manufacturing Plants.
Steam and Electric Power Plants.
Steam Heating and Ventilating Systems.
907-909 Peoples National Bank Bldg.
LYNCHBURG, VA.

F. W. Jennings E. A. Lawrence
Mem. Amer. Soc. C. E. Mem. A. S. M. I.

THE JENNINGS-LAWRENCE CO.

Civil and Municipal Engineers

Streets, Roads, Water Supply, Sewerage, Surveying, Designs, Specifications & Supervision.
COLUMBUS, OHIO
511-12 Hartman Bldg.

W. M. GARDNER, H. N. HOWE,
Mem. Am. Soc. C. E. Assoc. Mem. A. M. Soc. C. E.

GARDNER & HOWE

Engineers

Designs, Estimates and Supervision;
Concrete Bridges, Viaducts, Buildings,
and other Structures.

Porter Building MEMPHIS, TENN.

STANLEY F. MORSE

Mem. Amer. Soc. A. E.

Consulting Agricultural Engineer

Land Selection; Agricultural Surveys, Development Plans and Estimates; Supervision and Management of Agricultural Enterprises.

Territory: South, Southwest, Latin-America.
Spanish Spoken.

Hibernia Bank Bldg. NEW ORLEANS, LA.

W. S. KINNEAR & CO.

General Engineering

Consulting—Reports—Valuations
Specializing on railway and public utility reports and valuations.

111 Broadway NEW YORK CITY

T. M. IRELAND

Contractor

TEAMING—GRADING

MULES

2508 Maryland Ave. BALTIMORE, MD.

SAVANNAH ENGINEERING AND CONSTRUCTION CO.

Engineers and Contractors

SAVANNAH, GEORGIA

Specialty Design and Construction of REINFORCED CONCRETE WORK

COOLEY & MARVIN CO.

Management Engineers

Cost Accountants—Auditors

708-713 Tremont Bldg.
BOSTON

1348 Conway Bldg.
CHICAGO

Architects Chemists Engineers Geologists

The constant expanding activity in industrial operations throughout the Southern and Southwestern States are creating a steady demand for the services of architects, engineers, chemists, geologists and other specialists to render advice in plant design and operation.

Your card in the professional directory of the Manufacturers Record—for 35 years the leading exponent of Southern development—will keep your special line of work before the men who are in active charge of the South's industrial affairs.

DIRECTORY

ARCHITECTS

ENGINEERS

CONTRACTORS

Detailed classification of specialized work undertaken by those having cards in this Directory will be found in Classified Index.

Ford, Bacon & Davis, Engineers.

115 Broadway, New York

New Orleans

San Francisco

ARTHUR G. McKEE & CO.

Engineers and Contractors

Power Plants. Industrial Buildings. Metallurgical Plants. Blast Furnaces.
Storage Bins. Coal-Handling Equipment. CLEVELAND, OHIO.
Design—Construction

INTERNATIONAL CONVEYER CORPORATION Stuart System

Ground Storage and Reclaiming and Railroads,
Mines and Industrial Plants.

1512 H Street N. W.
WASHINGTON, D. C.

50 E. 42nd Street
NEW YORK

SCOFIELD ENGINEERING COMPANY

Consulting, Designing and Supervising Engineers

TEXTILE—MECHANICAL—ELECTRICAL—CIVIL

Commercial Trust Building

PHILADELPHIA

THE CONCRETE STEEL BRIDGE CO.

Engineers

Contractors

Bridges

Buildings

Industrial Plants

Union National Bank Building

CLARKSBURG, W. VA.

THE AMERICAN APPRAISAL COMPANY

MILWAUKEE

NEW YORK

Authoritative Reports and Valuations Covering Industrial,
Commercial, Mineral, Municipal, Public Utility and Resi-
dence Properties.

JOHN T. MCKINNEY CONSTRUCTION CO.

INCORPORATED

GENERAL CONTRACTORS AND BUILDERS

CONSULTING ENGINEERS

LYNCHBURG, VIRGINIA

DESIGNING AND ENGINEERING

RAILROAD AND HEAVY EXCAVATION

BUILDINGS, INDUSTRIAL AND HOUSING

REAL ESTATE DEVELOPMENTS AND LAYOUTS

ROADS, PAVEMENTS AND SIDEWALKS

WATER WORKS, BRIDGES AND SEWERS

CONCRETE WORK OF EVERY DESCRIPTION

QUARRYING AND STONE CRUSHING PLANTS

HOME OFFICE

PEOPLES NATIONAL BANK BUILDING

LYNCHBURG, VIRGINIA

RICKETTS & COMPANY, Inc.

Mining, Metallurgical and Chemical Engineers

280 MADISON AVE., NEW YORK CITY

The South, with its scarcely touched mineral resources, offers unbounded opportunity for development, especially in the mineral and mining fields. For nearly fifty years we have examined mines and mineral properties and made assays and analysis for owners and prospective buyers. With an increased technical staff, we are in better position than ever to handle such work for you.

One good investment or protection against a poor one pays a thousandfold for the cost of an examination.

Cable address, "Ricketts," New York.



STONE & WEBSTER

Industrial Plants and Buildings, Steam Power Stations, Water Power Developments,
Transmission Lines, Gas Plants, Electric and Steam Railroad Work, Substations.

NEW YORK

BOSTON

CHICAGO

FULLER ENGINEERING COMPANY

Designing and Constructing Engineers.

Portland Cement, Rotary Kiln and Hydrated Lime Plants.

Pulverized Coal Installations for Industrial Furnaces.

Main Office:

ALLENTOWN, PA.

50 Church Street, NEW YORK
Farmers Bank Bldg., PITTSBURGH
McCormick Building, CHICAGO

PRIDE & FAIRLEY

Consulting Engineers

Specializing in Drainage, Flood Prevention.

Reports and Investigations.

JOE P. PRIDE, formerly Chief Engineer St. Francis Levee District.

O. M. FAIRLEY, formerly Assistant Engineer Bureau of Drainage Investigation, Depart-
ment of Agriculture.

W. H. POE, Hydraulic Engineer.

BLITHEVILLE, ARK.

THE J. G. WHITE COMPANIES

Engineers—Contractors—Financiers—Managers

43 EXCHANGE PLACE, NEW YORK

London

Chicago

H. M. BYLLESBY & COMPANY

Engineers and Managers

Purchase, Finance, Design, Construct and Operate Electric Light, Gas,
Street Railway and Water Power Properties. Utility Securities Bought
and Sold. Examinations and Reports.

NEW YORK
Trinity Bldg.

CHICAGO
Continental & Commercial Bank Bldg.

TACOMA
WASHINGTON

TUCKER & LAXTON

Contracting Engineers

Filters, Concrete Work, Hydro-Electric and Steam Electric Construction

CHARLOTTE, NORTH CAROLINA

C. W. LANE & CO., Inc.

General Contractors

Steam and Electric Railroads, Water Powers Developed.
City Water-Works, Sanitary Sewers, Street Paving, Concrete Buildings.

General Offices, Healey Building

ATLANTA, GA.

THE S. R. SMYTHE COMPANY

Engineers

PITTSBURGH, PA.

Contractors

Steel Works, Rolling Mills, Blast Furnaces, Hot Blast Stoves, Furnaces for All
Purposes. Operated with Producer Gas, Natural Gas, Oil or Pulverized Coal.
Coke Ovens. Gas Producers, Hand Operated or Mechanical.

The Valve of the Era. SCHILD SLIDING GAS AND AIR REVERSING VALVES.

THE J. B. McCRARY COMPANY

Engineers

ATLANTA, GEORGIA

MUNICIPAL IMPROVEMENTS

We design and construct Water Works, Electric Light and Sewer
Systems—Paving and Road Work.

== DIRECTORY ==

CHEMISTS GEOLOGISTS

CHEMICAL ENGINEERS TESTING LABORATORIES

Detailed classification of specialized work undertaken by those having cards in this Directory will be found in Classified Index.

SAMUEL P. SADTLER & SON

Consulting and Research Chemists.

Analyses and Reports made in all Branches of Industrial Chemistry. Raw Materials and Waste Products studied and reported upon. Experimental work.
Office and Laboratory, 210 S. 12th Street; Experimental Laboratory, Chestnut Hill,
PHILADELPHIA, PA.

PITTSBURGH TESTING

LABORATORY

General Inspection

Specialties—Cement and Road Materials, Cast Iron Pipe, Chemical and Physical Tests.
CINCINNATI BIRMINGHAM DALLAS
CHICAGO PITTSBURGH NEW YORK

FROEHLING & ROBERTSON

Richmond Testing Laboratory

Chemists and Economic Geologists

Analyses of all kinds. Waters and fertilizers specialties. Standard Cement Testing Examinations and reports on mineral properties.
813 East Franklin St. RICHMOND, VA.

WILEY & COMPANY

Analytical and Consulting Chemists

Experts on Fertilizer Materials, Coal, Greases, Foods, Drugs, Dairy Products, Chemical and Bacteriological Examinations of Water for Domestic and Manufacturing Purposes.
7 S. Gay Street BALTIMORE, MD.

GEORGE C. DAVIS

Analytical and Consulting Chemist

Analyses of Iron, Steel, Ores, Alloys, Coal, Sand, Clay and Cement.
19 South Tenth St. PHILADELPHIA, PA.

ARCHITECTS

ENGINEERS

Your card on these pages will place you directly before the active forces of the South and Southwest.



THE INSTITUTE OF INDUSTRIAL RESEARCH

Consulting Chemists and Chemical Engineers WASHINGTON, D. C.

Special Attention to Food and Drug Products



WM. P. NELSON, JR.

Industrial Chemist

Analyses Inspections Research Chemical Control

NEW ORLEANS

904 Hennen Building

MINERAL CORPORATION OF AMERICA, Incorporated

Engineers Metallurgists Managers

Examination, Exploration and Management of Mining Properties.
Metallurgical Investigations. Processes Developed.
Analyses of Ores and Minerals.

ORE BUYERS
ORE SHIPPERS' AGENT

42 BROADWAY, NEW YORK
Also London

Architects

Chemists

Engineers

Geologists

The constant expanding activity in industrial operations throughout the Southern and Southwestern States are creating a steady demand for the services of architects, engineers, chemists, geologists and other specialists to render advice in plant design and operation.

Your card in the professional directory of the Manufacturers Record—for 35 years the leading exponent of Southern development—will keep your special line of work before the men who are in active charge of the South's industrial affairs.



We test foundations for buildings, bridges and dams.
We prospect coal and mineral lands in any part of North and South America.

WE LOOK INTO THE EARTH

By use of Diamond Core Drills

PENNSYLVANIA DRILLING COMPANY

2323 Whithall Bldg., New York. 1812 W. Carson St., Pittsburgh, Pa.
Phone Rector 5998 Phone Walnut 83

LOOKING FORWARD---BUSINESS AFTER-WAR CONDITIONS

Our more progressive Manufacturers are now detailing their engineers to plan new lines for their men and machinery the instant peace is declared, and are protecting against competition here and abroad under Patent and Trade-Mark laws.

EUGENE C. BROWN. PATENT LAWYER,
734 Eighth St., N. W., Washington, D. C., Graduate Engineer, Lehigh University; Member Bar U. S. Supreme Court; Former Examiner U. S. Patent Office. **PATENTS AND TRADE-MARKS.** Infringements and extent of patent monopoly investigated for manufacturers.

Davison Chemical Co.

ESTABLISHED 1832

Largest and Oldest Sulphuric Acid Plant
in the United States

SULPHURIC ACID

ALL GRADES

Also Manufacturers of

Acid Phosphate

OFFICERS

C. WILBUR MILLER - President.
GEORGE W. DAVISON - Vice-President.
E. B. MILLER - - Vice-President.
W. D. HUNTINGTON - Vice-President.
J. R. WILSON - - - Sec. and Ass't. Treas.

Main Office—Garrett Building

BALTIMORE, MD.

Works—Curtis Bay, Md.

Branch Office—2316 Equitable Bldg., New York

SERVICE

We Can Help You

Industrial, Chemical, By-Products

Distilled Water Plants

What Are Your Problems?

We Offer Service

Heating, cooling, evaporating,
crystallizing, condensing
Liquids
of varying specific gravity
requiring fixed ranges of
temperature.

We Build

Evaporators

Single Effect or Multiple Effect Design

Heaters

Closed Type Multiflow Design

Vacuum Pans

Coil or Calandria Design

BIRMINGHAM MACHINE AND FOUNDRY COMPANY

Birmingham, Ala.

Engineers

Manufacturers

Constructors

Rollin Chemical Company, Inc.

Charleston, W. Va.

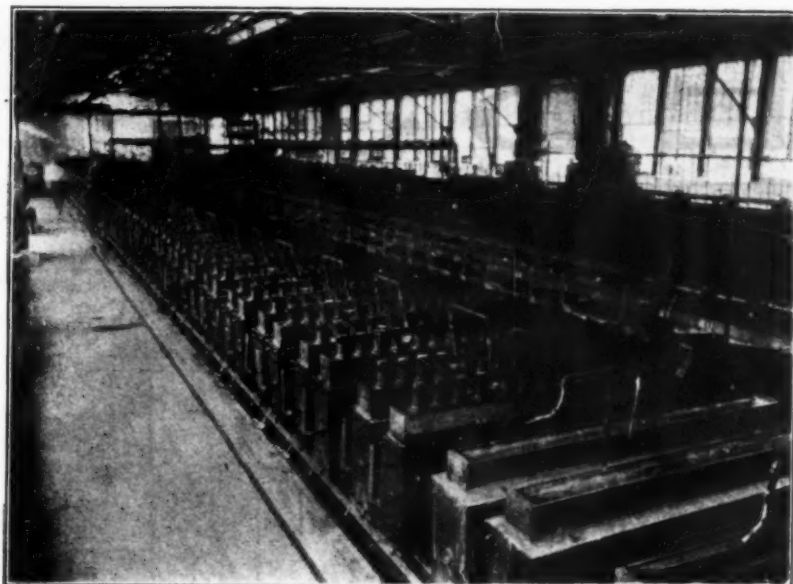
Manufacturers of

Barium Binoxide 90% BaO_2 Barium Chloride

Barium Carbonate 99+% BaCO_3 Barium Nitrate

Precipitated Barium Sulphate (Blanc Fixe) Dry or Pulp

Sodium Sulphide Fused 60%



For the production of

CHLORINE GAS and CAUSTIC SODA

The above illustration is typical of one of many installations of **NELSON ELECTROLYTIC CELLS** now in operation. Write for further information and list of important users.

THE WARNER CHEMICAL COMPANY

52 VANDERBILT AVENUE

NEW YORK



Jacques Wolf & Co.

*Manufacturing Chemists
and Importers*

Main Office and Works, Passaic, N. J.

Sizings and Finishing Products
for Cotton, Wool and Silk.
All Sulphonated Castor Oils.

Hydrosulphite
Bensapol
Bleaching Oil

Glasgow Size
Cream Softener

Alizarine Yellows
Sulphur Black
Mordants

Monopole Oil

U. S. Patent No. 861397 Serial No. 367303

New York Office, 100 William St.

Western Representatives:
United Indigo & Chemical Company
218-220 W. Kinzie St., Chicago, Ill.

FREEPORT Sulphur Company

LOCATION OF MINES

Freeport, Texas, Mouth of Brazos River

NEW YORK OFFICE

61 Broadway

SELLING AGENTS

PARSONS & PETIT, 63 Beaver Street, New York

Miners and shippers crude sulphur
in carloads or shiploads. Guar-
anteed ninety-nine and one-half per
cent. pure.

Mines located at tidewater on the Gulf of Mexico
Excellent facilities for prompt steamer loading
Complete service by rail

WEBSTER

**Machinery for Conveying, Elevating,
Screening, Washing, Storage and
Power Transmission**

Dependable

Webster machinery stays in ac-
tion—keeps working without in-
terruption.

Any other kind of machinery would
mean huge loss.

Whether the form of elevating, con-
veying or power transmission ma-
chinery, "WEBSTER" is a safe
name to tie it to.

Any Webster user will tell you
that Webster machinery is good.

Catalog and engineering suggestions upon request.



**The Webster Mfg.
Company**
TIFFIN, OHIO

Chicago

New York

This Company is proud of its Employees.

Although many of them are of foreign birth and not a few came from enemy countries, they have subscribed to more than Three Millions in Bonds of the Fourth Liberty Loan—an average of more than \$250 per man.

They have placed 2,234 Stars in our Service Flag, and more than 1,000 of them are fighting on the Western Front.

They have put their shoulders to the wheel in a way that has enabled us to render 100 per cent. service to the country in its hour of need.

The Youngstown Sheet & Tube Company

YOUNGSTOWN, OHIO

AMERICAN SALES OFFICES

Boston—129 Franklin St.	Detroit—1032 Dime Savings Bank Bldg.
New York—39 Church St.	Chicago—1563 McCormick Bldg.
Philadelphia—1615-16 Pennsylvania Bldg.	St. Louis—1139 Olive St.
Washington—715-716 Munsey Bldg.	Denver—725 First National Bank Bldg.
Atlanta—1814 Healey Bldg.	Dallas—915 Great Southern Life Bldg.
Pittsburgh—1626 Oliver Bldg.	San Francisco—604 Mission St.
Cleveland—526 Leader-News Bldg.	Seattle—Central Bldg.



How the Y. M. C. A. Invested Fifty Millions

THE Y. M. C. A. needs money—one hundred million dollars at least—to carry on its war work. Last year the American people contributed nearly \$50,000,000 to the cause. How was it used?

Read this statement. No fifty millions ever spent has brought so much comfort and happiness to the boys who have left all they hold most dear and gone across to fight our fight.

This money has provided a home for two million boys over there and for another million on this side.

It has built and equipped 538 huts in American cantonments, 550 in France and the building is going on at the rate of 100 a month.

It has rented great summer hotels at French resorts for the use of the boys on furlough.

It has provided canteens or stores both here and abroad, where the comforts of life are sold at cost.

It has printed and distributed 2,500,000 Testaments, 350,000 song books and 5,000,000 pamphlets.

It has provided educational lectures

attended by more than a million soldiers and sailors a month.

It has organized twenty-five theatrical companies, who travel the "Y" circuit all of the time.

It sends 15 miles of moving-picture films to France every week.

It has furnished equipment for all athletic sports and secured 1,500 athletic directors to train the men.

It has put "Y" workers on the troop trains, on the transports, at the firing line, in the prison camps—keeping in touch with the boys all the way, ministering to their needs, helping them fight loneliness and idleness—the worst enemy our boys are called upon to face.

Seven allied activities, all endorsed by the Government, are combined in the United War Work Campaign, with the budgets distributed as follows: Young Men's Christian Association, \$100,000,000, Young Women's Christian Association, \$15,000,000, National Catholic War Council (including the work of the Knights of Columbus and special war activities for women), \$30,000,000, Jewish Welfare Board, \$3,500,000, American Library Association, \$3,500,000, War Camp Community Service, \$15,000,000, Salvation Army, \$3,500,000.

Contributed
Through Division of Advertising



United States Government
Committee on Public Information

*This space contributed for the Winning of the War by
Manufacturers Record Publishing Co., Baltimore, Md.*

Are you drawing Power from this great reservoir?



ELECTRICITY has become recognized as one of the great elements of modern life. As a factor for industrial and household economy and convenience it ranks first among the world's most practical and adaptable forces.

Electricity for the Factory

Electrical current is the master workman of any shop. As motive power for enormous cranes or for the most delicate machine, it is always adequate — unlike other forms of power — its cost is applied only when in actual use.

Electricity for the Home

Electricity is the universal servant in the house. By means of the many devices now obtainable, housewives are, more than ever before, independent of servants. Electricity is clean, obviously economical and always a willing, handy helper in the home.

Consult an Expert

Electricity is safe and simple to use — it is only necessary to have an expert to plan and install the equipment. The electrical contractor, the electrical dealer, the architect, the central power company, and the manufacturers of electrical devices are all experts and will gladly assist you in getting the best service.

Dependable Wire

All electrical current is finally delivered by insulated wire. The usefulness of electricity, therefore, is dependent upon the quality of wire used and its correct installation.

Ecco Wire is always dependable, and is so recognized by experts. It is a standard of quality, and by its use can be judged the quality of materials and workmanship of an entire installation. Call in an expert at once. Connect up to the great reservoir of electricity with Ecco Wire, and begin to enjoy its benefits and economies.

ECCO Dependable Insulated WIRE

THE ELECTRIC CABLE CO.
10 EAST 43rd STREET NEW YORK CITY

Makers of Ecco Wire for every purpose where rubber-covered wire is used

NORTHROP LOOMS

Trade-Mark

The mill having Common looms that does not lay aside a part of its war profits to provide a Northrop Loom equipment is failing in its duties to its stockholders.

Draper Corporation

Hopedale Massachusetts

Copyright 1916 by Draper Corporation

THE WASHINGTON MILLS of FRIES, VA., consider quality and not price when buying supplies.

They have standardized L. & M. Paint for their plants upon account of its extreme durability and superior covering power.

Our paint is a semi-paste, and three quarts of oil must be added to each gallon, thus producing 1½ gallons of superb mixed paint at a proper price.

*We have sold Paints
"upon honor" for 62 years.*



Longman & Martinez
Paint Makers
NEW YORK CITY

ROEBLING WIRE ROPE



and WIRE ROPE SLINGS.

Roebling wire Rope Slings are the safe and efficient hoist for Handling;

MACHINE PARTS	PIPE
LATHES	STONE BLOCKS
PLANNER TABLES	EYE BEAMS
STEEL PLATES	GIRDERS
LADLES	COLUMNS
GENERATORS	Structural Steel in
MILLS	General
ARMATURES	Automobile Parts
BOILERS	and Other Materials

SEND FOR SLING BULLETIN

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY

Agencies and Branches
New York Boston Chicago Philadelphia Pittsburgh Cleveland
Atlanta San Francisco Los Angeles Seattle Portland, Ore.

"MONARCH WHYTE STRAND" WIRE ROPE

Quality Unsurpassed For
Hoisting and Haulage
MACOMBER & WHYTE ROPE CO.
Chicago Kenosha, Wis. Pittsburgh

Save Labor and Money On Every Car



by unloading and loading with a Dow Gravity Carrier. Built in all styles for all purposes. Eliminates use of trucks and manual labor. Pays for itself in a few months.
Men are needed to win this war—Let Gravity Do It! Save man-power. Speed up production.

Write for Details Today

**DOW WIRE AND IRON
WORKS**
Incorporated
LOUISVILLE KENTUCKY

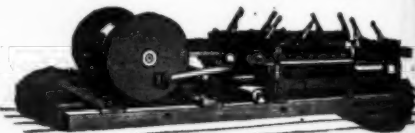


USE WOOD WOOL AND EXCELSIOR

for Upholstering and Mattresses and save the cotton.
Use it for packing and save the hay and straw.

Lewis T. Kline
ALPENA, MICH.

THE BEST EXCELSIOR
MACHINERY



B.&B. WIRE ROPE

MANUFACTURERS OF THE
FAMOUS YELLOW STRAND
WIRE ROPE

BRODERICK & BASCOM ROPE CO.
New York SAINT LOUIS

ROLLING Steel and Wood DOORS

APPROVED FIRE DOORS
THE KINNEAR MANFG. CO. COLUMBUS, O.

He Comes Back For More Nicholson Files



BECAUSE

One NICHOLSON will do the work of several ordinary files—and do it faster and better.

Look for this brand on every file you buy.



It is your guarantee of file satisfaction.

NICHOLSON FILE CO., PROVIDENCE, R. I.

Sold by the leading hardware and supply houses everywhere.

HIGH GRADE MALLEABLES

Malleable Iron Castings of every description. True to pattern—free from blemishes, scale or shrinkage cracks.

Made to specified tensile or transverse strength tests.

We are in a position to furnish you castings from your blue prints.

Let us figure on your requirements.

We are serving many of the most prominent manufacturing industries in these United States to their entire satisfaction.

Let us add you to the list.

THE MAL-GRA CASTINGS CO.
CAMBRIDGE CITY, IND.

MANUFACTURERS RECORD

DEVOTED TO THE UPBUILDING OF THE NATION THROUGH THE DEVELOPMENT OF
THE SOUTH AND SOUTHWEST AS THE NATION'S GREATEST MATERIAL ASSET

Trade-Name Registered in the U. S. Patent Office

BALTIMORE, NOVEMBER 7, 1918.

\$6.50 A YEAR.
(SINGLE COPIES, 15 CENTS.)

Vol. LXXIV, No. 19.
WEEKLY.

PUBLISHED EVERY THURSDAY BY THE
MANUFACTURERS RECORD PUBLISHING CO.

RICHARD H. EDMONDS, Pres. VICTOR H. POWER, Treas.
FRANK GOULD, Vice-Pres. I. S. FIELD, Sec'y.

RICHARD H. EDMONDS, Editor and General Manager

BRANCH OFFICES

NEW YORK, 52 Broadway CHICAGO, 405 Fisher Bldg.
BOSTON, 733 Old South Bldg. ST. LOUIS, 608 Century Building

SUBSCRIPTION RATES.

One year (in advance); six months, \$3.50; three months, \$2.00 to United States, Mexico, Cuba, Porto Rico, Hawaii and the Philippines. For Canada, add postage \$2 a year. For other foreign countries, add postage \$4 a year. Back numbers, if available and not over one month old, 15 cents each. From one month to six months old, 50 cents each; over six months old, \$1 each. In ordering change of address, give old as well as new address.

(Entered at the Baltimore Postoffice as second-class matter.)

In order to avoid delays, all correspondence pertaining to news or advertising matters should be addressed directly to the Manufacturers Record, Baltimore, Md., and not to individual editors, officers, employees or any branch office.

AS THRONES TOTTER THIS PREDICTION IS BEING FULFILLED.

(From Manufacturers Record of August 6, 1914.)

"HUMANITY may be staggered by the horrors of Europe's war, but civilization will not be destroyed. Millions of men and billions of treasure may be lost in this devilish work; thrones may totter and new maps of Europe may be necessary before the end is reached; but mankind will, on the wreck of these ruins, build a better civilization—one in which the people, and not a few unscrupulous men who feel that they have been Divinely appointed, will rule."

MAJOR-GENERAL BUNDY'S ENDORSEMENT.

MAJOR-GENERAL OMAR BUNDY, whose splendid work in France has made him one of the conspicuous leaders in the great fight for civilization, writes as follows:

American Expeditionary Forces.

France, October 3, 1918.

Mr. Richard H. Edmonds,
Editor Manufacturers Record,
Baltimore, Md.:

My Dear Sir—Please accept my thanks for the "War Eagle Series" which you were kind enough to send me.

Accept also the warmest words of praise for the part that you have taken in showing German barbarism in its true light.

Very truly yours,

OMAR BUNDY,
Major-General, U. S. A.

Major-General Bundy has had an opportunity to see for himself what German barbarism is, and he says in this letter that the MANUFACTURERS RECORD, in the vigorous presentation which we have made of the matter, "has shown German barbarism in its true light." We have not, therefore, overstated the case.

Mr. Wm. B. Dickson, vice-president of the Midvale Steel & Ordnance Co., in a letter to the MANUFACTURERS RECORD says:

"Your paper has been a real inspiration to every red-blooded American who has had the good fortune to number himself among your readers."

"America Faces the Supreme Crisis in World Affairs—It Stands Before High Heaven to Answer for the Trust Committed to It."

Editor Manufacturers Record:

I share with many Americans a disturbing uneasiness due to the cumulative effect of apparently significant occurrences which suggest undercurrent influences at work in Germany's behalf.

In my judgment, the Allied nations are facing the most serious crisis of the war. America is more vitally concerned than any other nation, because upon this country rests the military and moral responsibility for the issue. The gravity of the situation demands the exercise of the greatest judgment on the part of the responsible heads of our Government. An error in judgment at this crucial time might prove fatal. A false psychology might nullify the stupendous sacrifices of the past four years and the doom of the world for generations to suffer the evils which we now have an opportunity to destroy.

Any weakening of the moral fiber of our Government would damn America to the merited execration of the civilized world. To falter now would be to go down in history as a false friend and as a craven foe—false to the highest interests of mankind—false to every principle of right and honor and justice, fatuously credulous of the professions of confessed liars.

To no nation has ever been presented such a supreme opportunity to purge the world of the rule of pitiless might, and to establish the principles of human liberty as a fundamental of the law of all nations. No halfway measures will serve. Democracy is not a mechanism; it is a principle. The form of democratic government may exist without the vitalizing principle. Germany is offering us a sort of Trojan horse labelled Constitutional Government, but filled with armed men.

To us is given the power at this juncture to make democracy an established fact throughout the civilized world instead of an academic dream or a visionary hope. To us is committed in trust the welfare of man everywhere. It is for us to decide whether the outcome of this world war shall be a world tragedy or the dawning of a new era of freedom.

One moment of weakness, a single instant of yielding to maudlin sentiment, would be to disgrace the nation, betray our heroic Allies and commit a dastardly crime against humanity.

The American republic, by virtue of circumstances, is today the arbiter of the political and social fate of mankind. The clock of Destiny is about to strike the hour of American glory or of American shame. It rests with the Government at Washington to decide whether this republic shall be known to future generations as the liberator of the world from merciless autocracy or as a traitor to every sacred obligation which it has incurred on behalf of the human race.

There is no question of the sentiments of the American people. Our people, more sternly than ever before, are determined upon the complete conquest of Germany. The people demand unconditional surrender. I say this advisedly. For months I have not heard a dissenting voice. Every day the sentiment becomes more pronounced, more imperative. Our boys overseas are unanimously for a thoroughly subjugated and voiceless Hun, if their letters reflect their sentiments. They demand that the suffering and death of their comrades shall not be in vain; they declare with united voice that the

enormous expenditure of blood and treasure must not be brought to naught by a peace that would be tantamount to a surrender of the cause for which those lives were sacrificed. With their last breath many of our boys over there have adjured us to be steadfast. "It is worth the price"; "Do not falter"; "Don't you people at home weaken"; "The Boche must be conquered—there is no other way," are some of the messages from our wounded boys overseas. It is a sacred trust committed to us by dying heroes, now martyrs to a holy cause, but, if we fail, victims of a cowardly crime.

Can we be false to those boys? Can we take upon ourselves the damnable guilt of murdering the heroic youths who are willingly giving their lives to make the world safe for democracy? If we stop short of the goal for which they have made the supreme sacrifice we become in the sight of the world, and in the sight of God, no better than a nation of wanton murderers, beastly butchers of our own sons, sunk so low in the scale of humanity that even a hellish Hun would spit upon us in loathing after having duped us to our own damnation.

We can make no fine distinction between Germany and the Germans so long as the influence of Germanism survives. Germany, whether under Hohenzollern rule or any other rule, must be rendered powerless to disturb the world's peace for a hundred years to come.

What does it signify whether autocracy boldly proclaims its domination or, to gain a point, masquerades for a time in a lamb's skin? Calling a hypocritical tiger a lamb does not change his predatory nature. Germany must be submissively vanquished and rigorously punished at any cost. Hope of the demolition of German autocracy, militarism and diabolism is nearing its fruition through the valor of allied arms. No relaxation of effort, no change of policy, no surrender of purpose can be tolerated by the civilized world. All that modern Germany stands for must be swept from earth by the besom of destruction. The world must be rid of Hun hellishness, both actual and potential. The American people will stand for nothing less, nor can they be deceived by camouflaging a negotiated peace with the transparent subterfuge of negotiation with the German people.

We who hear the speech of the people, unfluenced by official or partisan bias, are beginning to hear elemental mutterings which circumstances might develop into a storm of rage. Whether justly or unjustly, there is a growing suspicion that affairs are tending toward retirement from the impregnable position of unconditional surrender. Many loyal Americans are getting into an ugly mood as they see what appear to them to be signs and portents of diplomatic retreat from the line established by our arms and by our solemn pledge to the world. Unconditional surrender is demanded by the American people. Thousands and scores of thousands are joining the Unconditional Surrender League. Women as well as men, war mothers and church organizations are eagerly placing themselves on record against a retrograde movement.

Victory is within sight. Not a compromise victory, but complete victory. The vantage must be pressed, not for diplomatic reasons, but because Almighty God will hold us as a nation accountable for our stewardship of the rights and interests of mankind. In our hands has been placed the power, and

to our consciences has been revealed the duty. We accepted the commission. Upon our souls will be the guilt of the hellish crimes Germany has committed during the past four years and will in future commit if we fail to make a recurrence of such atrocities forever impossible. Today this nation stands before the bar of High Heaven to answer for the trust committed to it. The verdict will exalt or damn us for all time.

We cannot shift the responsibility or evade the consequences. We shall either uphold Right or compromise with Wrong. We shall either establish democratic principles upon an enduring foundation or we shall become *particeps criminis* in the most heinous crime against Christian civilization the ages have ever witnessed.

Woe to him who shall prove to be an unwise counsellor!

Woe to him who shall be revealed as a false leader!

The welfare of millions of human beings yet unborn lies in the hollow of our hand. Power is not separable from responsibility. Our Government will shape the destiny of many peoples for weal or for woe, accordingly as it meets the supreme crisis in world affairs which we are now facing.

This is not hyperbole. It is a fact as true as the eternal verities. Our people realize it; all peoples recognize it. With the sword we are writing not only our national history but the history of many nations. With the sword we can make that history a record of peace, prosperity, progress and happiness. With the pen of diplomacy we can bring the hopes and aspirations of mankind crashing to the ground, blent in one great ruin.

This is not a war against the Central Powers as such. It is war against organized and aggressive evil. Germany, the satanic monster that rules the league of devils and the arch fiend in the covenant with hell, stands as the exponent of the forces which since creation's dawn have sought dominion over the lives and the souls of men. This war cannot be settled at the caprice of any one man, nor can it be settled by negotiations to which any man or set of men in Germany is a party. It is a war of humanity against diabolism, of Christianity against savagery, of honor against dishonor, of truth against falsity, of human freedom against autocratic individualism; it is a war of eternal principles, of right against the most shocking depravity the world has ever known.

He who talks peace upon any other terms than complete subjugation and drastic punishment of Germany is a traitor to his fellow men, an apostate from religious faith and a panderer to lustful beasts who live to prey upon mankind.

In the fullest sense we as a nation are today our brothers' keeper. As we do by our brothers in this crisis may God do also unto us. The crime of centuries flaunts itself in the face of civilization. Hypocritical pretenses of repentance by the beast whose paws are in a trap may delude men whose minds function only in a sublimated atmosphere of unreality, but the American people are laboring under no delusions. The crime is smeared broadly across the face of Europe. The criminal is known. The punishment is decreed by the united voice of civilization. There is in this country no imperial personage whose raised thumb can thwart the stern demands of justice.

On to Berlin!
Conneaut, Ohio.

F. A. CHURCHILL.

"DEAR BOB" AND BURLESON.

"MR. and Mrs. Robert Crain of Washington, formerly of Baltimore, entertained yesterday at Mount Victory, their country place in Charles county, Maryland, the Postmaster General and Mrs. Burleson; their daughter, Miss Lucy Burleson, and her fiance, Ensign Charles Greene Grimes.—Society Note.

And this is the same "Dear Bob" who has for many years been the attorney-lobbyist of the brewers of America and who was the "go-between" for the brewers and Brisbane, to whom they furnished \$375,000. And Postmaster Burleson has vigorously opposed prohibition. "Dear Bob" has been classed by a man who knows him intimately in his work as "a born lobbyist," able to get in with leading men. Crain and Burleson!

THE VOICE OF THE SOLDIERS WHO FROM PERSONAL EXPERIENCE KNOW GERMANY'S CRIMES.

WHAT the soldiers think of the war and of the talk of premature peace is set forth in an interview with Lieut. Dawson, the author of "Carry On" and other books about the war. Lieut. Dawson is here to recover from wounds. He has been in the fight from the beginning. He has written of the war as few others have done, and he has a right to speak for the soldiers. His message is as follows:

"People say, 'Stop the war and save the poor boys from being many days longer in the trenches.' The soldiers do not want it. They would sooner go on fighting if they knew that they were to die within a month than have an inconclusive peace and one that did not first of all make the Germans pay for some of the suffering they have inflicted upon the civilized world. The army will not feel that it has begun to win until we get on German soil. War is just beginning for us.

"The man at the front wants to keep the Hun hustling until he gets back into Germany, and we are in a position to give him an example on a miniature scale in his own country of what he has done to France and Belgium, which is the only thing the Hun can understand. If we make peace, with Germany intact, he will think that frightfulness pays. You see, he does not believe that he has been inhuman, from a moral standpoint.

"If the Governments of the Allies do not interfere, if they leave it to the armies to settle the war, we will be in Berlin by August. Americans who have not been through France or Belgium and have not seen the devastation of the Huns cannot realize what the war is. They can conjecture and sympathize only. The people in England have a better idea, because they are so much nearer to the war zone. The people in France and England are not talking about peace. They are determined to go on, no matter how long it lasts, until the enemy is thoroughly beaten. What they are looking for is Judgment Day. After that they will talk of a new Heaven and a new earth.

"That spirit grew up last summer so far as the British are concerned. Until May we talked of the Hun in a pitying and humorous fashion. The whole reason of our success since is that for the first time in the history of the war we began to hate the Hun.

"It commenced with their bombing the base hospital at Etaples and killing the sisters who were there nursing the wounded men. I saw big men cry like children when they saw what the Huns had done, and they swore great oaths to give them no quarter. The Hun when he comes down after being captured is weak and whines for mercy like a coward, but later on, after passing the casualty station and seeing that he is treated like our own wounded, he becomes haughty and finally a bully. Magnanimity shown to the Hun means weakness. The only thing that he understands is brute force.

"If we start to be sorry for him, just as we have begun to win, the Hun will only despise us. I can give you two illustrations from my own personal knowledge to show what the Hun really is. During a drive of one of the Canadian divisions to which I was attached, a young officer in command of a tank was very keen to go ahead. When the enemy counter attacked, he was left high and dry. Afterward, when our division again drove the Huns back, we found that he and the crew of the tank had been taken out, stripped, lashed to the tank and then bombed to death.

"The infantry swore they would give no quarter to the enemy for 24 hours, and they kept their word. This act was typical of the Hun, who does not only kill his enemy, but must do it in a barbarous and uncivilized manner.

"Some Australians who were in the same show with us at the end of August saw a dead German officer on a stretcher which had been left behind. When some of the soldiers went to lift the stretcher with the intention of giving him a decent burial, it exploded a small mine underneath and all of them were killed. It was a booby-trap set by the Huns, knowing full well that the Allies were too decent to pass the body of an enemy by.

"The German machine gunners are the bravest in the army and are treated as aristocrats by their own men. During an attack they will use their guns to the last minute and then take cover while our men rush past. When the Allies get a certain distance beyond them, the Germans come out of their holes and start shooting them down from behind. That is perfectly legitimate warfare.

"When, however, their ammunition and supplies have all been expended, these same machine gunners throw up their hands and cry 'Kamerad,' and in many cases they get away with it, because we do not like to shoot down defenseless men. They trade on the decent feelings of the Allies in every way in order to take a mean advantage of them.

"The Germans at the present time are fighting as well as they have ever done since the war began. As the Allies go farther into the enemy's lines, the progress becomes more and more difficult because as he retreats the Hun has destroyed roads and bridges and all means of communication. We have to build railways and roads to go after him. The enemy is also falling back on his reserves of munitions and sup-

plies while the Allies have to keep on bringing them up from the bases in the rear.

"If the German can trade upon the humane feelings of America so far as to bring moral pressure to bear and obtain an armistice, he will get a breathing space during which he means to dig in and strengthen his lines. Then the tremendous task which we have plished in breaking through the Hindenburg line will have to be done all over again.

"The new strategy is altogether different from the old form of frontal attack that we used at the beginning of the war, when we hammered away at a certain point and sacrificed thousands of men without accomplishing anything equivalent to the loss. Now the Allies, instead of making continuous straight forward attack, make dent after dent in his line, finding weak points, bring up their reserves and attack through.

"The fighting weather will last through June and, if the enemy can weaken the confidence of the men in their governments by talks of premature peace, so that they will not strike so hard, or, better, obtain an armistice in November, he will have time to choose where to strengthen his line for the spring drive. If we keep him going, we shall keep our plans on him, keep him from rebuilding his defensive power, and prepare our drive next spring with the factors in our favor."

A MESSAGE FROM AN ARMY CHAPLAIN IN EUROPE.

REV. E. P. SMITH, Chaplain for the Alabama Infantry, in a letter published in the Bessemer (Ala.) Weekly, says:

[From France under date of August 6.]

"You may tell our Alabama friends that the men of the old Fourth, Alabama Infantry, Alabama Rainbow Regiment, by a constant exhibition of unpassed bravery fully justifies all the fondest expectations of the people of Alabama, and the deeds of heroism on the fields of France has added one of the bright pages to the future history of Alabama.

"Like the men who followed the flag of the Fourth during the 60's, these men in France have fought but advance, and advance they did in the Prussian Guards and picked troops from Bavaria pushed on and on till the Alabama yell of triumph upon the breezes of France as clear as the tone of silver bell. Every man felt at heart that the honor and sacred history of the old regiment was in his hands as custodians of a reputation first made at Manassas and maintained by their fathers for four long years they must not by word or deed be less brave.

"Surely the sons of Alabama under Col. W. P. Rose are heroes—one and all. I thank God today that Alabama so nobly did her share—her very best at the frontier of freedom, and that no Alabamian has been but with his face toward Berlin and victory. I thank God that the Southern yell has been heard in France and I live, together with others from Alabama, in possession of a faith that will bear that yell and strikes terror to the Hun when he falls back humiliated and defeated across the Rhine.

"Troops from all the States are brave men, and Americans can rejoice that the Kultur of the Prussians is being punctured on the bayonets of democracy.

"Let no one speak, write or dream of peace till the serpent of Prussianism is killed and the world be a safe and decent place to live in.

"On with the shipbuilding program, on with the nation and training of mighty armies, on with the forge and furnace till Germany shall know that we are not 'scraps of paper' and the ocean become a highway where mortals can travel without the danger of assassination and non-combatants can live in fortified towns without being bombed by aeroplanes and the citizens of small nations can be secure in peace and pursuit of happiness, when the people shall be without let or hindrance by autocrats who claim power by so-called 'Divine right.'

"No soldier in France desires peace till Prussianism is completely crushed and the world is free."

Commenting on this, the Weekly editorially said:

"Here comes from one of them, one right at the ground, news of the tragic events that occurred months ago on the bloody battle grounds of France. That news should have been supplied promptly by the War Department without keeping for weeks and weeks the relatives and friends of Alabama's soldiers in an agony of uncertainty as to their fate. Today the details of the losses of the Bessemer company have not been published.

"However, the statement of Chaplain E. P. Smith is reproduced not to criticize the War Department or the powers whoever they may be for their neglect of a humane and imperative act, but as a record of bravery, heroism and sacrifices of Alabama's soldiers and of their resolution in exact line with the policy of The Bessemer Weekly that there must be no compromise with the Huns on any peace proposition. Prussianism must be completely crushed and the world is free."

"All hail to the brave and noble words of Chaplain Smith speaking for his soldier boys who have suffered from the atrocities of the Huns, that no one should dare to speak, write or dream of peace till the serpent of Prussianism is killed and the world be a safe and decent place in which to live."

Duty to Civilization Demands Drastic Control of Germany for Years to Come.

NOW that we confront a possibility of peace, it is important to crystallize our notions as to what must be demanded to guarantee the future safety of civilization.

The slogan of the people today is "Unconditional surrender," but we must know what we mean by that term lest we be tricked into accepting a submission by Germany that shall leave her still powerful, uncrushed and cherishing ambitions to work out her schemes of world dominion in some other way at a later time.

Germany can give no guarantees that the world is justified in accepting.

The only guarantee on which we can rely is actual physical domination by the Allies. We must control Germany, and control must be given through voluntary surrender as completely as if we had blasted our way to Berlin with bombs and shrapnel, otherwise we would stultify ourselves by accepting peace without victory."

Even to allow her to escape the devastation of war on her own soil would be to let the quality of mercy in us override our sense of justice. But, whether by the bayonet or by surrender, we must go to Berlin; our armies must sweep across Germany and establish our authority in every province and every city of the land.

That is what unconditional surrender involves as preliminary for securing the peace of the world. Less than that would turn the whole business into farce at the beginning.

Absolute surrender would entail of necessity the responsibility of political domination of Germany. In France they did in 1871, in Germany they did in 1918. The revelation of bestiality, brutality and utter selfishness in the German people, which this war has given to the world, demonstrates their incapacity for creating any form of government that can be trusted. They are far less fit to be dealt with as an independent nation than were the Filipinos, even the Russians, immersed as they are in the darkness of ignorance, are more worthy of consideration, for they do not possess the wanton bloodlust of the German, and as a race they are amenable to human sympathy.

The German is still no more than an educated barbarian, with the instincts of the highwayman predominant in his nature. His science has been cultivated to enable him to rob and murder, not to elevate mankind. The war has proved all this; no man can longer dispute it; hence to recognize a German nation and to enter into a treaty of peace with it would be to discard the bitter experiences of these four years of terror and to admit that the things we had seen with our own eyes were false.

It is the German race that we have been fighting; it is the German spirit of murder, rapine and plunder against which we have hurled our strength.

The brave men who have borne the brunt of battle, making the supreme sacrifice without hesitation or murmur, have been battling with the beast that is Germany, and they have been doing this to make the world safe for civilization, not to make it safe for a German sham democracy that would promptly seek to dominate the world if we leave it to these barbarians to constitute their own Government.

Unconditional surrender means absolute and unconditional political control of all the German states.

Under an international commission it may be possible to train the Teutonic peoples to an understanding of civic duty, in the sense that the civilized nations of the world give to that term, but it will take generations to reform a people so lost to all conception of honor and Christian responsibility.

India affords an example of the sort of discipline that must be applied in order to bring the Germans into a fit state for self-government. Perhaps in another century or two a great East Indian Commonwealth may be evolved through British tutelage. That is what British statesmen have long declared was their ultimate aim, but they know, and all men know, that the East Indian is not yet ready for the grave responsibilities of independence. No more is the German prepared by his habits of thought and his philosophy of life to be given the right of self-determination.

By his mad career through Belgium and France he has shown that he has risen no higher than the level of an organized raider; the spirit of the savages who sacked and plundered Rome two thousand years ago still lives in him.

We must not be misled by pretty phrases. Self-determination and democracy are for those that have been taught the significance and proper use of these instruments of social progress.

Until the German has learned these things through a prolonged period of training, he must be treated as the political incompetent he has proved himself to be by his own ruthless barbarism.

It is for the Allies to treat these people as wards, to be restrained, governed and guided, in the hope that in the end they may be trusted to take their place in the ranks of the civilized nations.

Moreover, it would be peculiarly fitting, after the wrongs inflicted upon gallant and cultured France, not only in this war, but in the struggle of 1870-71, that she should be delegated by the other Powers to serve as administrator over the several German States. It would be a just and proper Nemesis that she should receive the commission to execute the will of the Allies in governing the people from whom she had suffered so many injuries.

It is not in accord with the principles of our policy of "America for the Americans" that we should undertake political responsibilities in Europe; England will be occupied in the administration of India, Asia Minor, Egypt and the African colonies, and she will not care to add such a burden; but France knows Germany by long and sorrowful experience, she has learned her traits and her needs, by living alongside of her, and France has demonstrated the wisdom and strength of her own political institutions, so that she is eminently able to undertake such a service in the cause of civilization. In her straightforward, businesslike manner, without arrogance and without malice, she would perform this task adequately and well.

If Germany surrenders and will accept such terms, the peace of the world will be assured. The matter of indemnity is only a detail if these fundamental requisites are complied with, and if they are not no indemnity would be great enough to pay for the misery she has wrought. Indeed, a mere indemnity, even if it stripped the Germans of their profits for two generations, would leave them at the end of that period strengthened by the industrial effort they had made to pay it.

Only as a vassal, under tutelage for an indefinite period, can Germany be restrained from reasserting herself with the old pan-German spirit burning in her soul. If her unconditional surrender does not mean that she is ready to submit to such political dominance as an international ward, she is not yet sufficiently beaten, and we must go on and force these terms with the harsh argument of war.

There are many who do not believe that Germany contemplates the utter abandonment of her destinies to the will of the Allies.

Officers of the army recently returned from the front declared this week that they believe the Germans are merely using peace negotiations as an opportunity for getting their forces back to strong positions on the frontier, and that when we advance to claim fulfillment of Germany's promises we will meet with military resistance that cannot be overcome during the season of winter snow and rain.

They believe that the Teuton is a hopeless traitor, and will remain so until he is completely crushed by the only force he can understand, which is that of the sword.

It is in our power to test the sincerity of his peace proposals. If he knows he is conquered, if he is ready to accept the arbitrament of war, he will admit absolute political dominance by the Allies as part of the penalty. If he does not accept it, then with powder and ball, in the name of outraged humanity—

ON TO BERLIN!

A DANGER TO GUARD AGAINST.

WE need to beware of the tremendous power of the financial interests in this country, as well as in Germany, which will be used in the propaganda to secure peace for Germany without punishment.

Every pro-German in this country—and there are still many of them—will in every way possible try to plant the seed of "peace without punishment."

Every business interest that can be influenced through the devious ways known to the German propaganda will be put to work in neutral countries, as well as in our own country and in Great Britain, France and Italy, to save Germany from punishment.

German banking houses, private and State, having wide ramifications throughout the world, know that their bankruptcy is inevitable unless they can prevent the confiscation of Germany's war bonds, which should be one of our terms of peace, and full indemnity of all the cost of the war to the Allies, which should be another of the terms of peace.

Through Switzerland and other neutral countries these financial interests will move, as we recently said, not heaven and earth, but hell and earth to prevent their own financial destruction.

In many places where least expected there will be a quiet, but none the less aggressive, effort to bring about "peace without punishment." We shall find it cropping up here and there, advocated often by people who do not realize that they are being made a part of the German propaganda. Begging pleas for the women and children of Germany will be heard as one reason why we must not punish that nation, and these very pleas will be a part of the propaganda of German bankers to save themselves from loss.

The power of these financial influences is enormously great. We need not for a moment underestimate the effect of their work throughout the world. They will say to other bankers everywhere that the confiscation or forced repudiation of Germany's war indebtedness would be setting a precedent which might in the future endanger all bonds issued by Governments for war, and must, therefore, be opposed by all bankers.

This is one of the specious pleas which they will put forth. We need to be warned and to be put on guard against it. This will not be openly advocated. Probably no man will put on paper this plea against a confiscation of Germany's war indebtedness. Nevertheless, by word of mouth it will be passed from German bankers to the bankers in neutral countries, and to the utmost extent of this influence the propaganda against financial punishment for Germany will be pressed in this country and everywhere else.

Against such a move the nation should be on its guard.

PASS YOUR COPY ALONG.

IN a recent letter to the MANUFACTURERS RECORD Mr. Cecil P. Hostetter of Atlanta, district manager of the J. B. Ford Company, chemical manufacturers of Wyandotte, Mich., makes an interesting suggestion and one which we believe has been the rule of many of our subscribers for some time. It is:

"The writer wishes to take this opportunity to say that we always pass our copy of the MANUFACTURERS RECORD to some non-subscriber after the office force has read it, and believe untold good could be accomplished if the majority of your readers would do the same. We would take pride in saving and binding these magazines, but feel we are doing more good by passing them along."

We appreciate this co-operative work by our subscribers, and trust that they will not only pass their papers on to others, but that they will persuade others to subscribe and further the work.

NO GERMAN-MADE TOYS FOR AMERICA.

BUTLER BROTHERS, the big jobbers, to whom was consigned a shipment of German-made toys which reached the United States two weeks ago, took the only position which any honest-hearted American should take. They immediately declined to take the goods, though they had been bought and paid for prior to the beginning of the war in 1914.

In an announcement made to the public this concern said that prior to 1914 it had been, like others, importing toys and china from Germany, and that prior to the declaration of war that year they had made their usual purchase, which was forwarded to Rotterdam. The breaking out of the war delayed the shipment of these goods and they were greatly surprised to be notified recently that the goods, which had been lying in warehouses at Rotterdam, had been forwarded to New York without any instructions from them.

Their announcement said that they would have no German-made goods in their stock, that they had long ago charged the cost of these goods off of their books and eliminated them from their catalogues. Feeling that American children should have American-made toys, they have, therefore, been busy in encouraging the production of toys in this country, and they refuse in any way to encourage the German propaganda designed to place German-made goods back into American markets.

This action is creditable to one of the largest business houses in America. It is typical of what must be the voice of the trade in this country.

Any concern in America which for years to come undertakes to sell German-made goods will run the risk of bankruptcy, for it will have to compete with patriotic business houses who will refuse to deal in German goods, and the trade of America will naturally go to the houses which absolutely refuse to handle German-made stuff.

Every business house in the country should undertake, as a matter of sacred honor, to carry in its windows, on its catalogues, and on its stationery, an announcement that it handles no "Made in Germany" or "Made in Hell" goods, for the two terms are synonymous. Germany and all its people joyously and hilariously entered a war for conquering and looting the world. The German people upheld the army, and the worst atrocities committed in all human history marked every mile over which the accursed armies of Germany marched.

Every toy made in Germany will be forever stamped with the blood of innocent children murdered by Germany. We cannot conceive that any mother or father in this country would ever, unless they are as rotten-hearted as Germany itself, be willing to see their children play with German-made toys.

Every State might well pass a law forbidding the sale of any German-made goods, or at least compel everyone handling such stuff to stamp it, "Made in Germany," and to carry a conspicuous sign reading, "We Sell German-Made Goods," in order to put on such dealings the stamp of the blood-money lust of Germany transmitted to everyone who for blood lust sells German products.

In a report of the action taken by Butler Bros. as contrasted with the action of some other concerns which have agreed to handle these German toys, the New York Journal of Commerce has the following:

It was learned yesterday that four of the firms to whom German-made toys had been consigned from Holland refused to follow the example of Butler Bros., who declined to accept the goods after they had paid for them. These concerns sent replies to telegrams from Richard M. Hurd of the American Defense Society, asking them to refuse the shipments.

The four firms are: Strobel & Wilkin, Carl Silverman, William Schoenmann, all of New York, and Carl Tannhauser of Philadelphia. A telegram was also sent to Julius Rosenwald of Sears, Roebuck & Co. in Chicago, but as Mr. Rosenwald is now abroad, Mr. Hurd will endeavor to get in touch with other members of this firm.

It became increasingly evident yesterday that the campaign to boycott German-made goods in this country will eventually assume rather broad proportions. There was a meeting of the Women's Committee of the American Defense Society yesterday afternoon, which was addressed by Mr. Hurd and several women.

The general plan of boycott was discussed, and a committee of 100 women was appointed to make a tour of the retail stores throughout the city and urge retail men not to sell goods of German manufacture.

It was decided to request these retail shops to place signs in their windows stating that German-made goods were not sold there. In the event of refusal on the part

of shopkeepers to do this, the committee would announce that the public may assume that these shops have German goods on sale.

The campaign will begin at once, and it is likely that Christmas shoppers will be greeted with the legend "No German-made Goods Sold Here." At a meeting yesterday the belief was expressed that most of the shops would agree to this scheme. Incidentally, it was suggested that the public would soon learn which shops were American in spirit as well as in practice.

Mr. Hurd stated yesterday that the society, of which he is head, has other plans in connection with the campaign against German-made merchandise, which will be divulged in the near future. It is understood that every trade and industry will be communicated with in order to secure the closest co-operation from all quarters.

A new aspect was given to the situation when Mr. Hurd stated yesterday that he had been informed by an insurance man that steps would be taken by the latter's company to cancel its insurance risks on German merchandise which are now in warehouses. This insurance man, whose name Mr. Hurd declined to disclose for the present, said that such risks were bad morally and financially.

Mr. Hurd said that an announcement would be forthcoming from the insurance man, and the position which his company is expected to take in the matter will be made clear. Should the insurance companies decide to cancel their risks on the German merchandise now in the warehouses, it is believed that the movement will receive a strong impetus.

GERMAN PROPAGANDA DEVILTRY AT WORK.

FROM the editor of one of the aggressive patriotic papers of Texas we have a personal letter, in the course of which the writer says:

"I don't know whether you have noticed it in your section, but down here there appears to be an invisible movement calculated to make the American people tired of the war or break down their morale, as happened in the case of the Russian people.

"The peace negotiations now in progress with Germany have about caused many to lose the fervent determination they once had not to allow the war to end until the Stars and Stripes were planted in Berlin. In fact, the belief is becoming widespread that the world's stage has already been set for peace by some unseen power, and that peace is coming soon, by negotiation or otherwise, regardless of what the wishes of the American people are or once were. Peace news is scanned more eagerly than war news, even when great victories are heralded.

"What do you think of an American city celebrating 'peace' on the word of Germany, when it is well known that not a word of truth has come out of Germany since August, 1914, if ever before? This actually happened in Houston, where a cheering crowd headed by a brass band paraded the streets when Prince Max replied to President Wilson's note of inquiry and seemingly accepted the President's terms. But Houston was no exception, for apparently every German and pro-German influence was at work to create by suggestion the same feeling and impression everywhere, and this sinister movement succeeded wonderfully well until faithful and right-guided publications like the MANUFACTURERS RECORD warned the American people of the danger of it all.

"Many people are wondering, too, why the German Chancellor's reply to the President's inquiry was wired up and down the American trenches on the Western front as if it were the glad tidings of the end of the war as the war should end. Then again, there are murmurings about the affiliations of Colonel House and the influence the Colonel may practice on the President, whose confidential adviser he is alleged to be."

The points raised by our Texas correspondent are interesting. There are some suggestions in his letter in regard to Colonel House which make all the more questionable the desirability of Colonel House being a "peace" representative from America. Our peace representative should not be a man identified with the political activities of Texas in recent years.

WHAT THE SOLDIERS THINK OF PEACE.

MR. B. F. HARRIS, president of the First National Bank, Champaign, Ill., in a letter to the MANUFACTURERS RECORD, says:

"There is no question that the people are set on 'unconditional surrender,' and my brother, just home from a trip to the Western front, tells me that our boys at the front, coming back wounded from the front, and the seriously wounded in the hospitals, asked always, when they learned that he was just over from this side, 'if we were really and seriously talking peace at this time.' Their first and last message to the folks back home was that we must 'stay in this war until we have wiped out Prussianism forever.'"

Mr. Roswell A. Benedict of South Norwalk, Conn., writing on the same subject, carries at the top of his letterhead the following:

"Unconditional Surrender or Extermination. Berlin.

with Germany a condemned criminal under the peace table, in chains, awaiting sentence, to be the scene of the Peace Conference."

NEITHER GERMAN GOODS NOR GERMAN PEOPLE SHOULD BE ADMITTED TO AMERICA.

A DISPATCH from Amsterdam quotes the Rhenish Westphalian Gazette as suggesting that Germany must hereafter buy as little from America as possible. It takes the position that importation of American agricultural machinery must cease, and that Germany must push its own machinery into Russia, Roumania and the Balkans. And it adds:

"The conclusion seems inevitable to the Gazette that Germany must so curtail her cotton and copper imports from the United States that they do not exceed or slightly exceed her own exports of fertilizers, dyestuffs and chemicals."

Here is another illustration of the fact that Germany is looking forward toward shipping its products, its dyes, and its chemicals, at least in sufficient quantities that they should equal Germany's importations of cotton and copper from the United States. We all know, of course, that it is Germany's intention to throw upon this market the product of its mines and factories to the utmost extent possible. It will sell at the lowest possible price in order to knock down our new industry and to get immediate cash regardless of profit, provided we are so sufficiently bereft of reason as to permit the importation of German goods into the American market.

The honor of the country should be sufficient to prevent the importations of German products, but as there are a good many people in this country who have demonstrated the fact that they would sell their souls to the devil, if by doing so they could help Germany, we can count with assurance that there will be a great many people eager to buy German products. Against this we should erect a barrier absolutely forbidding the importation of German-made stuff. Or if that is not feasible, then put the tariff so high that we can keep German products out of American markets in that way.

We do not need to buy from Germany. We do not need to trade with that country, and the more completely we cut ourselves off from all intercourse of all kinds with Germany the better it will be for the future of this nation.

As we want no German products, so we want no Germans settling in America. We have had enough of the race as it now exists. We have found that many Germans and many people of German descent living in this country have been so obsessed with the German spirit that they have upheld the vilest crime in the world's history. They gloated over the sinking of the Lusitania. One of the foulest deeds ever recorded against humanity, these pro-Germans yet gloated in it as illustrative of German's power and might, as they thought. These people would gladly see Germany victorious in this war.

It is scarcely possible within the next generation or two to educate out of this race the false doctrines which have been passed from father to son, doctrines which have been carried out in German warfare for centuries, and which have gradually permeated the life of the German people until the whole race seems to have lost its sense of honor, of integrity, and of morality.

Some days ago when the writer had concluded an address before the Baptist ministers of Baltimore on the war situation, in which some of the atrocities of Germany had been mentioned, one of the leading ministers at the meeting said that he wanted to emphasize what had been stated in regard to German immorality, and he gave as one illustration of it that when he was studying at a German university the professors advised him to live a continuously immoral life on the ground that any student in German universities who did not do so would be ashamed to admit it. That, said he, is one illustration of the immorality which prevails throughout the teaching and the life of Germany.

We do not want such people in America. We do not want such doctrines brought here any more than we want to welcome into this country the men who during four years have committed the most fearful crimes in all the annals of history, and the women who have upheld them in these crimes.

THE VAS
BELGIUM
TO AM
HOW
tude
Belgium, at
have endured
the benefi
we rememb
in the
the number
the death
actual deat
date, amou
eth as many
have died.
and in inva
our Allies
will probab
men, or tw
America has
The awful
by our Allie
minded to co
shot to piec
mained and
diseases incl
in the aggr
the loved o
has exceede
on the battl
fering of th
the millions
dreds of mil
a state of c
can, perch
conditions w
Upon our
three long
made in Ge
of the defin
that the Fe
France and
which have
the people o
to the rebu
derastated
The Belg
of the war,
peace woul
countries. T
people have
held in New
a French e
reconstruction
would cost
been so con
thing that c
wait a hun
raises the s
shells to a
for agricult
of France h
into other p
of German
Thus the pu
cult one, e
needed, esti
dollars.
As the Ge
gium and I
manufacturi
the machin
most impos
due for the
France, but
it profitable
Germans h
trade neces
Belgium. T
tries as con
vacuum in
France, wh
by their
leading Ne
German ma
ing of the
the German

November 7, 1918.]

THE VAST RECONSTRUCTION WORK IN BELGIUM AND FRANCE AS IT RELATES TO AMERICA.

HOW little we of this country grasp the magnitude of the horrors inflicted upon France and Belgium, and what England and Serbia and Italy have endured in the great struggle, of which we are the beneficiaries, may be faintly understood when we remember that 2,000,000 Frenchmen have died in the war, and 1,000,000 English soldiers, while the number of wounded men has largely exceeded the deaths. As against these fearful figures our actual death losses in France, as reported up to date, amount to less than 50,000, or only one-fortieth as many as the number of French soldiers who have died. What the aggregate loss is in death, and in invalidism by wounds and by disease which our Allies have suffered can never be told, but it will probably in the aggregate exceed 10,000,000 men, or twice as many as the total army which America has been planning.

The awful physical and mental suffering endured by our Allies is beyond all power of the human mind to comprehend, for the sufferings of the men shot to pieces on the battlefields, those blinded and maimed and gassed, those who have endured the diseases incident to the hardships of the war, have in the aggregate been less than the sufferings of the loved ones at home, for their mental anguish has exceeded the physical anguish of the soldiers on the battlefields. When to this we add the suffering of the millions impoverished by the war, of the millions driven from their homes, and the hundreds of millions who for four years have lived in a state of constant, unceasing horror and fear, we can, perchance, gain some little perception of the conditions which have prevailed among our Allies.

Upon our Allies we rested for our safety. For three long years they stood between us and the "made in Germany hell." Now that we are in sight of the definite destruction of Germany's power, now that the fearful pall of woe is being lifted from France and Belgium and Italy, and other lands which have suffered from Germany's accursed work, the people of these countries are naturally turning to the rebuilding and the reconstruction of their devastated lands.

The Belgian Government, even during the hottest of the war, has been planning for the time when peace would make it possible to reconstruct its industries. The French Government and the French people have been doing the same. At a meeting held in New York a few days ago Louis Chevallion, a French engineer, made the statement that the reconstruction of the devastated portions of France would cost \$8,000,000,000. In places the land has been so completely ruined by shells that the only thing that can be done with it is to plant trees, and wait a hundred years for their growth. In some cases the soil has been completely destroyed by shells to a depth of 18 feet, and is utterly useless for agricultural purposes. Some of the population of France has been shifted by the war, having fled into other parts of the country before the advance of German troops into other parts of the country. Thus the problem of reconstruction is a very difficult one, even outside of the enormous amount needed, estimated by Mr. Chevallion as eight billion dollars.

As the German armies have retreated from Belgium and France they have ruthlessly destroyed manufacturing plants, and shipped into Germany the machinery. This has been done on a scale almost impossible to comprehend. It was not only done for the purpose of impoverishing Belgium and France, but for the diabolical purpose of making it profitable for Germany after the war, since these Germans have counted upon capturing all of the trade necessary for the rebuilding of France and Belgium. They first sought to destroy these countries as competitors, and then sought to create a vacuum in the whole industrial life of Belgium and France, which they have expected they would fill by their "made in Germany" products. Even a leading New York paper recently suggested that German machinery should be used for the rebuilding of these manufacturing interests destroyed by the German army.

We do not believe that France or Belgium or England should have to buy a single dollar's worth of machinery or goods of any kind made in Germany. We trust that these countries will erect against German trade a barrier which it will be impossible for German merchants and manufacturers ever to break down.

It is true that German manufacturers will build factories in neutral countries for the express purpose of avoiding the odium which must ever attach to German-made goods, but these German factories in neutral countries should be regarded with the same hostility by America and by our Allies as German factories in Germany itself.

It becomes our duty to our Allies to supply every need which they cannot supply at home. As we have rigidly conserved food in order to keep our Allies supplied, so, if need be, we should conserve in our own use the products of our factories whenever and wherever they are needed by our Allies. Our duty to our Allies demands that we should re-equip their factories wherever they need American equipment, even if we have, temporarily, to deny equipment to some American factories.

For three long years we hid behind the armies and the fleets of our Allies. Let us show our recognition of that fact by helping them financially, and with equipment of all kinds to the utmost extent of our ability. Our bankers owe it to our Allies to co-operate in every way possible in the financing of their needs. Let us now through this co-operation atone for our shortcomings during the two and a half years of war when we utterly failed to meet our responsibilities to God and civilization.

A CENTENARIAN'S VIEWS ON GERMANY'S PEACE TERMS.

MR. FRANCIS B. LIVESEY of West Friendship, Md., vigorous and active, though nearly 100 years of age, in a letter to Mrs. Harry G. Skinner, vice-president of the War Mothers of America, sets forth peace terms which he suggests that the War Mothers adopt. They are:

1. Call every peace proposal cartoon fodder.
2. Bring Germany down to unconditional surrender.
3. Banish the Kaiser and his war lords to some St. Helena.
4. Allow not a woman to go with the banished party, that the race of barbarians may become extinct with the death of the banished.
5. Divide up Germany, Austria, Bulgaria and Turkey among the contiguous countries or among those within them who are worthy.
6. Call upon all contiguous nations thus generously enlarged, and the new nations born in the midst of the oppressors, to show thanks by becoming republics.
7. Call upon all nations that want to join the League of Nations and assist in assuring the future peace of the world to prove themselves worthy of world brotherhood by also becoming republics.
8. Hold it up that as the Civil War banished slavery, so this war must banish kings and that the clouds will begin to break when the world proclamation to that effect is issued, as was the case in the Civil War with slavery.
9. When the time for peace comes, daily not with any long-drawn-out conferences. Some hard-fisted, stern, practical man should dictate peace in short, sharp, decisive terms.

HOW ANOTHER MINISTER FEELS ABOUT GERMANY'S WAR METHODS.

EXTRACT from a letter written by Rev. Dr. Allyn King Foster, D.D., of Brooklyn, N. Y., now associated with the Y. M. C. A. in France:

"Well, as you know from the papers, Paris was heavily attacked by air raids night before last (September 15). I have been in a score or more, but this was the worst. At 1.30 A. M. I was awakened from a dead sleep by three awful reports. I slipped on my raincoat and slippers and went below.

The sight of shells bursting in air in spots of flame and the awful roar of guns, with now and then an explosion of a hellish bomb apparently right in our block, had its climax in the hum and whir of the enemy planes a few hundred feet over our heads.

There must have been 50 of these immense Gothas coming in waves. That racket kept up until 3 A. M.

Damage and death always happens as in this case. Everybody with intelligence goes to the lower floors or the cellars, the latter the best, as a bomb can topple down a six-story building of ordinary construction.

One of these planes was shot down in a nearby field. A French aviator saw it the next morning. There were dead lying about and plane wrecked, though wings and body (except machinery) intact. Justice generally lumps, but not this time."

GOVERNMENT CONTROL MAKES FOR INEFFICIENCY.

A WEEK ago an important press dispatch to the MANUFACTURERS RECORD was filed in Washington at 2.30 P. M. Tuesday as a straight day press message. The first page of it reached the MANUFACTURERS RECORD's office, just 40 miles from Washington, at 11 o'clock Wednesday morning, and the balance of the dispatch was received on Thursday morning—a glorious illustration of the efficiency of the service given to the country by Government control of the telegraph system!

A day or two after this occurrence a copy of the MANUFACTURERS RECORD was sent to a Government official by special delivery in order to be in time for an important conference at which some matters covered by that issue were to be discussed. Notwithstanding the special delivery stamp, it took just two and a half days' time for delivery of the paper between Baltimore and Washington.

But why recall such sad illustrations of inefficiency under Government domination? Any man who has had occasion to watch Governmental control of great public service institutions has known that Government control made for inefficiency. Had there never been an Interstate Commerce Commission the railroads would have been in infinitely better shape, and the country as well, when the war broke out than they were under the absolute domination of the Interstate Commerce Commission. Had the Government permitted the railroads to increase their freight and passenger rates anything like as much as they were immediately increased when taken over by the Government, the railroads under private management would have been able to extend their facilities and give far better service than we have had under Government control.

The dangers of Government control are stupendous. They mean the addition of millions of employees for Government service to be dominated largely by the political party that may be in power, and to be directed largely by political influences.

A phase which is certain to be dominant under Government control is given in the following extract from the Houston Post. Though the statement is credited to an anonymous railroad official and, therefore, does not carry full weight, it is indicative of the conditions which are certain to come about if the Government continues the control of the railroads of the country.

A St. Louis newspaper prints an interview with a railroad executive who, under Government ownership, is a shorn of most of his power, in which this interesting passage appears:

"How do I like Government ownership? Not as well as I did before we got it—in the neck. You know I used to think it might be a good thing. Let me tell you a little story. Our road runs through the State of—well, let's call it Felicity. In that State there is a certain little town that had been wanting a big branch line and a fancy station for some years. We figured on its cost and upon the business we would get from the town as a result of the improvement. We figured the former low and the latter high. We could not afford the improvement. We said so. Then along came Government ownership. The demand was made again. We refused. Then the two United States Senators of Felicity came around. We explained things to them. One of them said: 'Oh, to hell with that! There's Government ownership now. You can put it through.' I said I couldn't. From the director-general's office came somewhat later a request for information on this matter. It was supplied abundantly. The thing would be a waste of money. I thought I'd made my case. No such thing. Soon there came an order that the improvement be made at once. It's being done. I met one of the United States Senators of Felicity at Washington, and he slapped me on the back and said: 'Old man, you see anything can be done under Government ownership.' And it can, if strong Senators or groups of Senators want it. Other railroad men tell me of experiences like my own. The politicians are getting into the Railroad Administration."

POTASH.

MR. B. M. BARUCH, chairman of the War Industries Board, writes the MANUFACTURERS RECORD:

"The matter of production of potash has been placed in the hands of Secretary Lane, who, I believe, has turned it over to Mr. Van H. Manning. There is all the necessary money and the power to accomplish the object which we all desire. My board will have to do only with the distribution of the product."

RELIGIOUS LEADERS OF NATION DEMANDING GERMANY'S PUNISHMENT.

ONE of the most gratifying signs of the times is the spirit with which the foremost ministers of America are proclaiming the real truth as to Germany, and pointing out that the teachings of Christianity demand the full punishment of the criminals. A few ministers have been led into adopting the sickly, sentimental, mushy teachings of the German propaganda designed to create the impression that Germany is not to suffer for its crimes, but that we must hold out the hand of friendship and forgiveness to an unrepentant criminal. The real religious leaders of the country are now emphatically demanding that Germany shall be made to surrender unconditionally and be punished for its crimes.

The case is strikingly stated in a sermon by Rev. J. S. Lyons of Atlanta, who, in discussing the question of peace with Germany, said:

"The request of the German Government for an armistice forces all thoughtful people to a new appraisal of the moral elements involved in the great struggle. Any move which looks toward the settlement of a dispute inevitably raises the question of relative guilt of the parties. The moral sense of the civilized world has been so shocked and outraged by the unprovoked raid of Germany and her vassal countries that there is an inevitable impulse to invoke the ancient *Lex Talionis*, the law of retaliation, and demand 'an eye for an eye, a tooth for a tooth.' Indeed, the feeling amongst the soldiers in Belgium and France who see the sickening evidence of the insane brutality of German soldiers is to demand 'two eyes for an eye and two teeth for a tooth.'

"As they pass through the devastated sections on their way into Germany their slogan is 'a town for a town.' But it is our duty to apply the law of Christ even to the Hun. We must control the impulse of mere revenge. But we have no right to smother the spirit of justice.

"Christianity is not a compromise of principle; it is a payment of the last farthing; it does not invite a timorous soul to accept a marked-down salvation, but a settlement in which eternal justice has been fully met and satisfied. It would be a monstrous perversion of its teachings and spirit to invoke them in an effort to let the guilty go unpunished. It would be an ultimate injustice and unkindness to the Teuton allies if they were to go unwhipped for their crimes.

"We must say to our soldiers, as they go into German territory, 'never lower your colors to a German soldier, nor fail to lift your hat to a German woman or child. Let no home be unnecessarily destroyed, no private property pillaged, no church desecrated.'

"We must make Germany pay the last farthing of the cost of this war to every country engaged in stopping her brutal raid on civilization; let German labor and German money rebuild every road and factory, every home, replant every tree, vine and shrub destroyed by vandal hands, refurnish every factory, replace every vessel sunk by submarine, repay all losses of interrupted business with full interest.

"Have strategic cities in Germany occupied by allied forces until this debt is fully paid. Unless this is done, justice, simple justice, and every law and institution of civilized society which depends upon justice, will be hurt well-nigh to death. Christian civilization may come out of a deluge of bloodthirsty barbarism over which she has triumphed purer and stronger, if elemental justice triumphs also. But if savagery can get terms by which it may carry back to its bloody lair the loot of its four years of murder and plundering, Christian civilization will have sacrificed its self-respect and will have neither message nor mission to a future which will be black with the certainty of another and wilder eruption of savagery. In view of these facts, let us say, 'No armistice that is not an immediate surrender, and no peace that is not a complete satisfaction of justice.' An armistice applies to belligerents in a war waged according to humane principles. This is not a war, it is a massacre. Germany is not a belligerent, she is a brigand, and has no claim for a hearing at the council which decides the final terms.

"When it is proper for the murderer, the rapist, the incendiary, the thief, with the blood on his hands and loaded with the loot of plundered homes, of pillaged art galleries and of desecrated churches, to insolently demand a seat on the bench by the judge, then Germany, the super-bandit, whose cruelty sickened even the Turk, may expect a place at the peace council.

"The tribe that has stolen everything from the toys of little children, whose mangled bodies they have hilariously carried on their bayonets through the streets which once rang with their happy voices, to the entire railroad and manufacturing equipment of Belgium and northern France, can never sit down with civilized people to discuss the crimes in which they glory. The German nation has been ruled for 30 years by a near-crazy king, whose boundless vanity has somehow hypnotized his people, while it led him on to the last stages of blasphemous egotism. Believing him to be the Lord's anointed, they have wallowed in servile adoration of their 'All Highest.' They have sowed the wind; they are due to reap the whirlwind. There is no peace for the wicked short of repentance, restitution and reformation."

TWO WORDS.

H. R. P., in the Providence Journal.
For despot wife and puppet guile,
For skilled and cultivated meekness,
For lying rant and pious cant,
For leopard stealth and panther sleekness,
There are two words, two words alone—
Two words to answer the Pretender—
Two words that summon Sword and Throne
To UNCONDITIONAL SURRENDER.

No peace, no truce, for trick and ruse,
No mawkish mercy and forgiving.
Our hosts who bled, our holy dead,
Would cry their shame upon the living.
The words with which our anger glows
Its loins to meet the Red Offender
Are two alone—and those two words
Are UNCONDITIONAL SURRENDER.

Shall we forget the fowler's net
Far spread beneath the quiet water;
Forget the mild and helpless child
That perished in its scarlet slaughter?
Our hearts are sore within us still,
Our memories are fresh and tender,
Our goal, our purpose and our will
Are UNCONDITIONAL SURRENDER.

The dastard's mark is deep and dark
On Rhelms, the beauteous, the shattered.
Her rainbow glass amid the grass
His unrepentant hand has scattered.
What respite shall we yield the Hun,
The unconquering beauty-spenders?
What answer give the suppliant? None
But UNCONDITIONAL SURRENDER.

By trench and grave where lie the brave
Who rose against his lust and ravage,
United now our souls we vow
To smite the Scientific Savage.
By Freedom's hopes and Freedom's fear
We swear our passion to defend her—
We'll chain the Beast a thousand years
In UNCONDITIONAL SURRENDER.

WONDER WHAT RIGHT HE HAS TO SPEAK!

"WHEN you meet an old brother or sister tearing his or her hair and paving the air, condemning peace and peace terms, crying for blood and slaughter and relentless war until Berlin is burned, it is well to ask, 'Have you a boy that may appear in the next casualty list?' If the answer is yes, then it must be conceded they have some right to the position. But if they have no blood liable to be spilt, are making no sacrifice, buying no bond, and not supporting the Red Cross, we question their right to stay peace."—Lebanon (Tenn.) Banner.

We wonder if the editor of the Lebanon Banner is definitely trying to encourage peace without punishment. Has he any boys in the army, or is he there himself? Or is he merely trying by this pacifist tone to create an atmosphere of leniency which would lessen America's determination to win this fight on the battlefield? Has he any right to speak for others? If he is within the military age, has he enlisted in the battle of civilization against barbarism? If he wants to know what the fathers and mothers, whose loved ones are actually in the fighting, think about the question of peace, let him read the voice of American motherhood expressed through Mrs. Starr on the cover-page of the MANUFACTURERS RECORD of last week. That is what American mothers and fathers who have loved ones at the battlefield are thinking on the subject!

FROM A MINISTER WHO HAD FOUR MURDERED ON THE LUSITANIA.

REV. HENRY A. GRIESEMER, D.D., acting pastor of the Second Baptist Church of Wilmington, Del., in referring to the letter from Mrs. Wm. J. Starr, published on the cover-page of the MANUFACTURERS RECORD last week, writes:

"I want to thank you most heartily for sending Mrs. Starr's letter to me. I used it last night while speaking to a fine audience with most thrilling effect. Such letters as that printed in the great journals of the day will fire the hearts of our American people with the highest patriotism and lead them to be satisfied with nothing short of driving the Huns to their knees and make the infamous Kaiser pay in full the penalty of his multitudinous crimes.

"God bless you in your splendid, effective and ceaseless hammering of the brutal, bestial Kaiser and all of his ilk, as well as all the pussy-footed and shirking pacifists and slackers in our home land. And may He give you strength of mind, heart and body to keep up

the fight until we shall see them all relegated to the scrap heap of history, where they shall suffer the tortures of the damned for their infamous atrocities inflicted upon a suffering and sorrowing world."

WASTE OF MONEY BY GOVERNMENT FRANKED STUFF.

Larche Dry Goods Co.
West Monroe, La., October 28.

Editor Manufacturers Record:

I am a subscriber to your paper and I want you to know that I fully appreciate your expressions upon the leading public questions, particularly the war situation. There is no doubt in my mind of the great value to the American people of the firm stand which your paper has taken all along. Our people as a rule are aroused and nowadays the Government has only to mention the amount of money wanted and it comes. All the people down in Louisiana are in favor of "Berlin or Bust." No halfway measure will suffice. We are prepared to make good in war or peace. Let's do it.

I am one citizen of the United States who is proud to pull his hat off to the MANUFACTURERS RECORD as the most fearless paper in America. I have learned that the MANUFACTURERS RECORD is either for or against a measure. It never waffles.

Please permit me to call attention to a piece of literature which purposes to have been sent out by the United States Printing Office, evidently "franked." This is propaganda against woman suffrage. Now, I submit that the Government's money should not be spent on either side of this great question. And I hope your journal will make it plain that such wasteful expenditures should cease. Our State is submitting an amendment to its Constitution upon this subject, and we do not really need the advice sought to be given.

I assure you that the MANUFACTURERS RECORD, of whatever size it may be in the future, will be received with delight in our home and read by the family. I am simply writing a few of my sentiments as to the MANUFACTURERS RECORD, because it is my friend and guide. I could not ask you to publish this while paper and labor are so high, and only ask that you treat the franking of the circular in your journal in the interest of right and justice to the taxpayers of the United States. I enclose this document. L. M. LARCHE.

The speech which Mr. Larche enclosed with his letter is a Congressional address against woman suffrage and apparently in the interest of the liquor traffic; and we can always count that whatever may be the pros and cons on woman suffrage, the liquor interests will always oppose woman suffrage, because they know that the majority of women will fight against this accursed business.

We fully agree with Mr. Larche that the constant mailing under Government frank of the enormous amount of literature that goes out from Washington is an outrage upon the country. It costs many millions of dollars, it wastes a vast amount of paper at a time when paper is scarce, and floods the mails when the mail facilities of the country are already overcrowded.

A few days ago the MANUFACTURERS RECORD received a page from the Congressional Record containing a speech by Congressman Heflin of Alabama. In which he had repeated the President's political appeal, and on the side of the page was written the statement that the Democratic Congressional Committee had taken 500,000 copies of that speech. The speech was supposed to be in the interest of the South as against foolish criticisms by some Northern papers, but it was seriously marred by being used by Mr. Heflin as an introduction in order to work in President Wilson's political appeal.

We suppose that these 500,000 copies were mailed under the Government frank and that the people of this country were thus burdened with the heavy expense of the paper and the mail and the clerk hire needed to send out such stuff. If Congressman Heflin had permitted his defense of the South to stand alone and had not used it merely as a vehicle to carry President Wilson's political appeal, he would have done the country a service instead of stirring up factional hatred as he did.

The MANUFACTURERS RECORD is absolutely opposed to the use of the Government frank for such purposes. It does not believe that the politicians of either party should be allowed to flood the country under the Congressional frank with stuff which the people do not want. The burdens that are being laid upon the backs of the people by the foolish extravagance of this kind, merely to benefit the politicians who send out the stuff, are getting too heavy to be borne.

And yet we are told to conserve paper!

POWER
AM
WE
Turk
Germany,
nite purpos
istic agita
The same
Germany
destroy
strong me
thrown, D
Y. M. C. A
and who h
as a mean
that count
more real
country in
try, and y
of these gr
agitators h
triflingne
German m
of terror
finally lift
the French
people by
That sa
throughout
many. If
may bring
will result
which may
change and
so richly
have been
tary equip
planning fo
agenda, at
there is an
have put
their work
sion that
humiliation
even if its
adequate
rulers wou
the scene,
long run, a
spirit of th
We are
stand at t
centuries
born will
shaped by
drillzation
talk of a
humiliation
ishment fo
are being p
lend the m
and that p
a greater
evil which
the work
has not b
propagand
many up i
in seeking
for the G
that nation
and with
discuss th
of nations
Imagine
your imag
mean for
men who
tion to th
peace tab
the repre
France an
ceive for
tives of o
the awful
have to m
peace tab
war to m
civilizatio
directed t

November 7, 1918.]

POWER OF BOLSHEVISM AT WORK IN AMERICA TO SAVE GERMANY.

WE are reaching the climax of the war. Austria, Turkey and Bulgaria are out of the fight. Germany, in desperation, may hold on for the definite purpose of trying to create Bolshevistic, anarchistic agitation in this country as it did in Russia. The same influences are at work in America which Germany with devilish ingenuity put to work to destroy Russia. That great country had many strong men in it. Just before Kerensky was overthrown, Dr. John R. Mott, General Secretary of the Y. M. C. A., a man of world-wide travel and study and who had just made his fourth visit to Russia as a member of President Wilson's commission to that country, made the statement that he had found more really great men in Russia than in any other country in the world, not excluding our own country, and yet within a few months a large proportion of these great men had been murdered. Bolshevistic agitators had grasped the reins of power and with a frightfulness which they had learned from their German masters, had brought upon Russia a reign of terror and of murder which, when the veil is finally lifted, will make us think that the days of the French Revolution were merely a Sunday-school picnic by comparison.

That same Bolshevistic influence is at work throughout this country under the direction of Germany. If Germany can hold out a little longer, it may bring about conditions through this work which will result in lack of harmony among the Allies, or which may produce some friction and some halting change and save Germany from the punishment it so richly deserves. The men who for fifty years have been planning for this war, not only in military equipment, but planning for it psychologically, planning for it by education and by world-wide propaganda, are not going to give up at this hour if there is any possible hope of holding out until they have put into full effect all the utmost power of their work to foment discord, to create the impression that Germany must have a peace without humiliation, that its people must not be punished, even if its rulers be nominally overthrown. Without adequate punishment, the overthrow of German rulers would be merely the temporary shifting of the scene, which would have no serious effect in the long run, as nations go, in changing the thought and spirit of the Teutonic race.

We are dealing with tremendous problems. We stand at the parting of the ways for unnumbered centuries to come. Hundreds of millions yet unborn will have their destiny for weal or for woe shaped by what we do in this the supreme hour of civilization. Our people are being beguiled by the talk of a "healing peace," of a "peace without humiliation to Germany," of a peace without punishment for its criminal acts. Tremendous efforts are being put forth, disguised in many ways, to mislead the nation into a belief that the war is over and that peace is here. The German propaganda is a greater illustration of the force of the power of evil which is at work in the world than has been the work of German armies. Its military success has not been near so great as the success of its propaganda throughout the world for holding Germany up in times past for world adoration and now in seeking to bring about a mawkish sentimentality for the German people with a view to securing for that nation a peace without unconditional surrender and with the right to sit around the peace table and discuss the terms for world peace and for a league of nations.

Imagine for one moment, if it is possible to get your imagination stretched that far, what it would mean for the shrewd German diplomatic liars, the men who have used psychology and mental suggestion to the utmost extent, to gather around the peace table as the equals in peace discussion with the representatives of America, of England and France and Belgium and Italy and Serbia! Conceive for one moment the thought of the representatives of our Allies, who for four years have suffered the awful agonies of this brutal war of murder, to have to meet in diplomatic intercourse around the peace table those who joyously entered upon the war to murder France and Belgium and the rest of civilization, the men who upheld barbarism, who directed the forces that wrought the wreck and ruin

over every foot of land touched by these barbarians! And yet that is what Germany is looking forward to!

She is eagerly calculating that she will be represented, not as a supplicant, not as a criminal, but as an equal of other countries at the peace table. Dispatches are being sent out from Germany naming the men who it is said will be Germany's representatives at the peace conference, and even giving some particulars in regard to their life work. Surely, we would justly call down upon ourselves the punishment of Heaven if we should fail to do our duty by insisting upon full punishment of the criminals.

SHALL WE PRODUCE AMERICAN POTASH AND MAKE OURSELVES INDEPENDENT, OR SHALL WE LEAVE OURSELVES AT GERMANY'S MERCY FOR POTASH?

BECAUSE potash has not been available except in very limited quantities during the last four years some fertilizer companies have undertaken to create the impression among farmers that potash is not an essential food for agriculture, and have sought to devise fertilizers which might meet the needs of plant food, using a very limited quantity of potash. Others are looking forward to the time when, after the close of the war, it will be feasible, should we so desire, to secure potash from Germany.

One of the leaders in the industry in a letter to the MANUFACTURERS' RECORD takes the ground that we would not be at the mercy of German potash monopoly because Germany needs our phosphate rock as much as we need potash, and that, therefore, we could in effect trade one for the other.

Both of these positions are entirely erroneous. We need potash in large quantities, but the idea that we shall leave our potash industry undeveloped and look to Germany for our potash supply, and in exchange therefor furnish phosphate rock to Germany, is a view which cannot commend itself to the thought of intelligent, patriotic people generally.

If we are to resume trade relations with Germany on the same friendly basis as in the past; if we are to stretch across the ocean and clasp hands with the blood-dripping hands of all Germans, for all Germans are steeped in human blood; if we are to entirely forget the fearful horrors of the last four years brought upon the world by the accursed action of a nation of criminals; and if we are to welcome these people back into world commerce and barter back and forth with them without a question as to the ethics of trade with a nation of unrepentant murderers and liars, who have proved that not a word they say can be believed, then, of course, the thought that we can barter phosphate rock for potash might be carried into effect. We trust, however, that this is not the view of many American people. Certainly it is a false economic view, if we entirely dismiss the moral issue.

The business of this country is to make itself independent of the world by producing at home everything which it can make here. It is our business to utilize our own resources for the production of potash. If we had done this in the past we would not have had the four years of potash famine from which the country has suffered. If in the same way we had been wise enough to develop our sugar trade we would not have found ourselves so short in a sugar supply and placed in a position which, had the U-boats been more successful on the Atlantic coast, might have destroyed our ability to import sugar from Cuba.

We have almost limitless resources for sugar at home, especially in Louisiana, Florida and parts of Texas. Why should we throw away an opportunity of developing our own resources, keeping the money at home, and making ourselves independent of the world in sugar?

We have iron ores carrying a very large percentage of potash. They can be utilized for the production of by-product potash to the profit of the country and to its safety in the future. We have potash deposits in the West, and we have great potash-bearing slates in the South. Out of these resources which nature has given us it is within

our power to establish a potash industry fully equal to the growing agricultural needs of the country, and thus help our farmers to meet the world's increasing call for food, and at the same time make ourselves wholly independent for all time to come of German potash.

Here and there are to be seen evidences of a disposition to create the impression that potash is not needed except to a limited extent, or that this country cannot produce potash, and that the money invested would be wasted, or that we can buy potash elsewhere when the war is over. All of these are wholly erroneous positions, contrary to the best economic development of the country and contrary to the best ethics of our dealings with Germany.

We should recognize and fully admit to the farmers that there is a great need for potash, and that we can produce an abundant supply of potash if the Government will co-operate with the various interests in making it possible to secure the capital and guarantee the industry against the fight which German potash will inevitably make upon us the moment the seas are open for the shipment of German stuff.

So deep and bitter should be the resentment of this country against Germany that every farmer and every farmer's wife should vow that they will never use a ton of any fertilizer using German potash.

As we have suggested elsewhere that American merchants should safeguard their future by carrying on every letterhead, and by placing in their catalogues and in their stores that "no German-made goods will be handled by us," so some aggressive fertilizer companies should pledge on every bag of fertilizer sold that they will not use a ton of German potash, but will depend wholly upon the American supply. Every fertilizer company which will do this will necessarily win the approbation of every right-thinking farmer in the land. When this campaign has been fully put into effect the fertilizer concern which imports or handles German potash should find that it can sell its potash only to those who have no concern as to the most fearful crimes ever committed in human history, and we believe that their number is not sufficiently great to permit any fertilizer company to live on their trade.

Away with German potash!

RESTING PLACE IN FRANCE PROPOSED FOR AMERICAN HEROES WHO DIE OVER THERE.

WRITING on the question as to whether the bodies of our soldiers who die in France shall be brought back for burial after the war, an Arkansas correspondent of the Little Rock Gazette, Alex. L. Skillern, suggests that our Government buy a square mile of ground, possibly between the Aisne and the Marne, and make it the most beautiful spot on earth. In this cemetery bury all the American heroes who have died in France, each division to have an immense monument, on which would be inscribed the heroes' names. It is held that this would be an enduring memorial, which for ages would be reverently visited by tourists from all over the world.

THE SOLDIER'S VIEWPOINT.

FROM a soldier in the army the MANUFACTURERS' RECORD has a letter, in the course of which it is said:

"Do you think we are now going to sacrifice all the sacrifices of the past for a sham peace, and in so doing defeat our own purpose? I hope nothing so suicidal and immoral will be considered."

We believe that statement voices the sentiment of practically every man in the service. It voices the thought of the fathers and mothers whose sons are in the service, and it should voice the thought of every honest-hearted man and woman in America.

On to Berlin and Unconditional Surrender should be our only answer to peace offers.

A PHILOSOPHICAL FARMER'S VIEW ON CROPS, PRICES, PRO-GERMANS AND OTHER THINGS.

FROM the small country farmer, even from one whose English is far from perfect and whose spelling and punctuation may not be according to the rules, one can often get a real light on the farming situation. A man's ability to study a situation and to know what is taking place in his own industry is not always measured by his ability to write his letter in Wilsonian English, and yet his letter may have sound judgment back of it.

From such a Florida farmer we have an interesting letter. Its English is bad, its spelling is worse, of punctuation it has none, but of good, hard common sense it is chock full. Without changing its meaning we have tried to improve a little on its spelling and punctuation, and yet to leave the letter almost exactly as written in order to present the exact meaning of the writer.

This Florida farmer, however, has read into the MANUFACTURERS RECORD some things which he never found there, but which he evidently found in other publications, because he thinks that the MANUFACTURERS RECORD made the statement that the corn crop of 1917 was the largest ever recorded, and that we have not sufficiently stressed the food situation. In this he is entirely wrong. For the last five years the MANUFACTURERS RECORD has unceasingly pointed to the certainty of an ever-increasing cost of food-stuffs if the Government did not recognize and remedy conditions existing. We have ceaselessly criticized the Department of Agriculture for its misleading, overoptimistic statements in regard to crops, and we have warned the country repeatedly that the farmers have not been getting a fair share of profit out of their business for many years, even if they ever did.

We believe that the danger of a decreasing food supply by reason of failures by the Government to realize the situation, and at times by the Food Administration, is exactly as outlined by this farmer.

The enormous price paid for labor at shipyards and other industrial plants, prices authorized by the Government, is drawing from the farms an immense amount of labor in addition to the men called into the war.

Even at the high prices now paid for farm products the farmer cannot compete with the prices paid to industrial labor, and farms will be abandoned.

We have repeatedly pointed out that efforts made to hold down the price of eggs and chickens and milk and other products would inevitably result in a decreased supply and in much higher prices year after year. These things our Florida farmer sees clearly and states rightly.

It is an interesting fact, according to this letter, that at one shipyard in Tampa there are every day 100 or more automobiles owned by ship workers, many of whom travel 20 miles in order to work in a shipyard and secure the big prices that are there paid. This man's 15-year-old boy, for instance, is in a shipyard earning over \$26 per week, and yet the nation is expecting that every farmer shall continue to increase the food supply, though utterly unable to compete with these prices for labor.

Unless the farm laborer can be paid wages commensurate with the prices paid in munition factories and shipyards and kindred interests, it is as certain that the laborers will leave the farms and go to these high-paying industries as it is that the sun will rise tomorrow morning. Moreover, the farm owner, unless a man of considerable means, will himself leave the farm, sell off his livestock to butchers and his poultry to market men, and abandon his farm for the time being if necessary, and make more money in working in these industries than he can make by working on the farm, since on the farm the Government undertakes to set the price at which he can sell his wheat and his hogs and to hold down the prices of other things.

We fully understand the tremendous hardship to the consumer of the high prices for farm products, but this country today is facing a question of whether we shall have controlled food prices and no food, or a wide-open price on farm crops and an increased production of food, with the farmer stim-

ulated by high prices to stay on the farm and to pay his laborers sufficiently high prices to meet to some extent the competition of shipyards and munition factories.

When the Government last year was claiming that the corn crop of 1917 was the largest on record, the MANUFACTURERS RECORD was persistently warning the nation against accepting the statements, and later on pointed out that the feed value of the crop was the smallest for many years, because more than 1,000,000,000 bushels was made almost valueless, except for immediate consumption, by the early frost which prevented the crop maturing.

The MANUFACTURERS RECORD has never let up for years in its fight for a larger realization by the United States Department of Agriculture and by the country itself of the fact that we are walking straight toward a precipice of a food famine, and it will not be many years before we reach it if there is not a radical change in the methods adopted.

Our Florida farmer friend wants to know why the Postoffice Department will not permit the MANUFACTURERS RECORD to be sent to the soldiers with a one-cent stamp, and he wants to know if this ruling cannot be reversed. The answer is that the Postoffice Department, with a narrowness of vision which indicates something of bureaucratic methods, will not permit this to be done unless the MANUFACTURERS RECORD will call itself a "magazine." The Department denies the soldiers the privilege of having this publication sent them for one cent unless we will print a card on the cover page specifically saying "this magazine," whereas the MANUFACTURERS RECORD has for 35 years taken the ground that it is not a magazine, but a newspaper. From this decision we have been unable to move the Postoffice Department, and have finally given it up as a hopeless task. If on the cover page we comply with the requirement of the Postoffice Department and call the MANUFACTURERS RECORD a "magazine," we deny every statement we have made for 35 years to the effect that this is not a magazine, but a newspaper, and we perpetually place ourselves on record as identifying the MANUFACTURERS RECORD as a "magazine" instead of as a newspaper.

Our Florida farmer touches on many interesting points in a quaint and interesting fashion. We are glad to give his letter, and as we have criticized his English as it appeared in its original form, we refrain from publishing his name. His letter is as follows:

"Many thanks for your printing letter of some weeks ago. I have been reading your paper for over a year.

"One thing I am thinking of now is, why don't the postoffice let you print on the outside cover the privilege to send it to our boys. You have stated they would not, but can't it be arranged for? Many former rulings have been reversed. I don't like the name of Hun. Can't you make a more appropriate name. When they are called Devils, you slander old Satan. If my teaching is correct, Satan only persuades you to sin, never doing anything himself. Your writers call them rattlesnakes, but a rattler never fights unless he thinks he is cornered, and then gives warning before he strikes, and his strike is deadly, not torture. I like your attacks on the wishy-washy preacher who bellwatches about peace and lends his voice to spread pro-German. If he is innocent, more the pity, as fools should be cared for in time of peace and if necessary shot in time of war.

"You are probably right in thinking that there is too much price-fixing, but you are not strong enough about the food situation. Having been trying to farm all my life, I feel that there is more real danger in fooling with the farmer than any other one thing, not excepting Germany itself.

"To illustrate. Two years ago a boycott was officially encouraged against eggs. I had over 350 hens that were at that time losing money every day. I kept an account of every egg gathered and of each sack of feed. Not counting labor, I lost, but hoping to get more eggs in the spring and at war prices to balance losses, I was confronted with a boycott, and was told that I was a thief. I have not sold an egg for four months. But while they kicked on 35 cents, and threatened to put them as low as 25, they now ask where they can get eggs at 70 cents per dozen. I have to tell them I don't know anyone that keeps chickens. We sold our hens at 15 cents; they now are looking for hens and will pay the farmer 40 cents a pound. Most markets don't now have chickens or eggs for sale; in this city only a few.

"Butter was another thing boycotted, but Florida don't raise butter; she buys that in Northern States. No one was loyal that payed over 30 cents for butter. We are told that Tampa will be paying 80 cents as soon as the little that was contracted for is worked off, and that there will be a limited supply at that, and that we may expect even higher prices. Potatoes was another thing on the list. I read that there were mil-

lions less potatoes used last year than the average for other foods. Farmers lost on potatoes, and we are remarkably short crop this year, which may develop into almost a famine. Cabbage was not a very big crop here last spring; there was an unusual amount but the yield was not heavy. My former letter explained the situation in cabbage in this immediate neighborhood. Last year there were 125 acres; this fall there will be two or three.

"The cabbage growers can get from \$25 to \$30 a week in the shipyards. I am told that some men come over 20 miles, night and morning, in their cars. I have there are at least 100 autos at one shipyard gate. The truckers have left the farms.

"When I was raising corn in the corn States a force worked in the field 12 hours in the rush making a good long day, with the milking and the care for. Disgust the farmer with price-fixing and the works but eight hours and goes to picnics and on Saturday.

"Please remember that the farmer produces his tire living on his own farm, and don't forget that we cannot commandeer the farm products that we never raised. It must be an every-day business on your farm. Rockefeller could hardly keep his hands off if 60 days are neglected, for there is but one season and harvest.

"I have never been interested in cotton, but that the grower is in the same boat as the rest.

"You a short time ago made the statement that the 1917 crop was the largest corn crop ever raised, which is just what the press have been printing for a year. The Government report, issued March 1, 1918, gave as the SHORTEST CROP IN 35 YEARS. I have never seen a write-up on that report. In fact, the Secretary of Agriculture some weeks later, in a speech here in Tampa, said it was a record-breaking crop.

"FOOD will win this war, but we are now on the down-hill slide on farms.

"Farmer boys are going away every day, but we told that tractors will fill their places. DO YOU KNOW THAT YOU are betting the life of your ones that they will?

"Can't the people see what has happened to butter and potatoes, poultry, pork at 50 cents at a local butcher, and beefsteak out of sight?

"Can't you see the red flag of danger, or will you drift on with your eyes shut to I DON'T KNOW WHERE?

"I have three boys too old for the first draft. I enlisted a year ago, one will go in this draft. The eldest, a first-class farmer in the corn belt, I expect to do his bit in hogs and corn. I have a boy 15 who is begging me to try and get him in the Aviation Corps, and if his mother will consent, will try; he has been in the shipyard earning \$26.40 per week, doing his job. We have four pro-Germans, or that were pros. I got two in jail this week and one will be caught in the draft; then for the lone one left.

"Get after them. Do it yourself," is my motto for pros.

"Please don't think I mean that the farmer is unpatriotic and that he will fail. He has always taken what was offered not asking much nor threatening. The idea is that if you put him down too hard he will be discouraged and go to better work with shorter hours and more pay.

"Many men in this section had not enough to pay their bills for fertilizer, out of total sales. One man told me that it took \$750 more than his crop sold for to pay for fertilizer, though he made a lot at home; and he had thought when his cabbage crop was growing that he would make \$15,000 on 40 acres."

ANOTHER ANSWER TO COLONEL CRAE'S "IN FLANDERS FIELDS."

By H. L. PLUMMER, Petersburg, Va.

If, by your torch, we could not see That we must keep the Faith with thee, The flower, to you, whose shade is lent, Would blush to be our monument In Flanders Fields.

Notice to Readers.

Our readers will please bear with patience the long delays which sometimes occur in publishing accepted matter or the utilizing of suggestions which come from all parts of the country. While the Manufacturers Record welcomes suggestions on all the problems which this nation is now facing it is not possible for us to use all of these suggestions nor to publish promptly all of the accepted articles. The limit of space and of time makes it difficult to meet all of these conditions.

Our readers are also asked to remember that the delays which often take place in the delivery of the paper are not due to our office, but to the congestion of business in the postoffices and on the rail roads.

November
BRITISH
AN article
Donald, K.C.
his Paramour
esting as we
pressed upon
approached
roads, not
ties, but in
importance
Mr. Mac
upon the su
the p
subject, whic
that it has
the automob
population, t
The article
Wellington
the midst of
want, my L
tremendous
operations i
even in pla
order that t
dred without
depreciated
ing hitherto
portation up
improvement
being of a
more buildi
"Everywh
Donald, "mo
the road in
tion of ani
extent to w
appreciated
hear motor
tional, and
power vehic
public and
an interlop
given excep
People who
whether the
traffic has
greater deg
that anima
of being th
tion, where
tis will be
fall into th
his will, wi
"Observa
times the
suits. A
market, wh
tions throu
the time o
P. M. and
suits: Pa
In country
observation
111; horse,
counting u
resulted th
the comme
rapid. •
see that
goods has
increase d
don show
merical ve
oughfares
by mecha
brought o
commercial
that Lond
generally
Working;
of trade
service w
traction;
to be con

BRITISH VIEW OF MODERN ROADS AND MOTOR VEHICLES.

AN article recently published in Chambers' Journal, written by the Right Hon. Sir J. H. A. Macdonald, K.C.B., LL.D., under the title "The Road: Its Paramount Importance," is reasonable and interesting as well as valuable. The great war has impressed upon the public at large, in a manner never approached before, the inestimable value of good roads, not only in the immediate theater of hostilities, but in the British Isles and in America, their importance being equal to that of the railroads; but Mr. Macdonald's contribution to the literature upon the subject is especially enlightening as affording the point of view held by Britishers on the subject, which has not apparently made the advance that it has in the United States, where the use of the automobile is not limited to any class of the population, but is general even in rural regions.

The article begins by quoting the great Duke of Wellington as appealing to the House of Lords in the midst of one of England's wars: "What we want, my Lords, is roads, roads, roads!" Then the tremendous worth of good highways in military operations is emphasized and also their necessity even in places remote from the scenes of war in order that the usual business of a country may proceed without hindrance. It also points out the deplorable state of roads in Great Britain resulting hitherto from the concentration of freight transportation upon the railroads, but also the gradual improvement now in progress, some of them already being of a high type of modern construction with more building as opportunity is presented.

"Everywhere throughout the land," says Mr. Macdonald, "more power vehicles are being put upon the road in each season, and a corresponding diminution of animal-drawn traffic is taking place. The extent to which this is so appears not to be fully appreciated by many. It is still quite common to hear motor traffic spoken of as something exceptional, and as an intrusion upon general traffic. The power vehicle is still looked upon by many of the public and by not a few local road authorities as an interloper, to which no consideration need be given except by way of complaint and oburgation. People who so think and speak will have to awake, whether they like it or not, to the fact that motor traffic has in great degree become, and will in greater degree become the traffic of the road, and that animal haulage must recede into the position of being the exception, and that a negligible exception, where formerly it was the rule. A few statistics will be found convincing by all but those who fall into the category of the man persuaded against his will, who is 'of the same opinion still.'"

"Observations recently made in London," continues the article, "bring out most remarkable results. A test recently taken at the top of Haymarket, where the vehicles must pass in both directions through a driving space of only 46 feet in width, the time of the test being one hour, between 7.30 P. M. and 8.30 P. M., brought out the following results: Passenger vehicles: motor, 1750; horse, 17. In country districts it is much the same. Five days' observation in Perthshire gave this result: motor, 111; horse, 1. A test of cabs only taken in Pall Mall, counting up to 600 of those mechanically driven, resulted thus: motor, 600; horse, 4. In the case of the commercial vehicle the progress has not been so rapid. . . . No one who observes can fail to see that the number of power vehicles carrying goods has been rapidly increasing, and continues to increase day by day. Observations taken in London show that from one-third to one-half of the commercial vehicles upon the street, in the busy thoroughfares around Trafalgar Square, are now driven by mechanical power. Tests on recent occasions brought out 446 horse-drawn to 279 motor-driven commercial vehicles. But perhaps it may be said that London is not a fair criterion for the country generally. Here is a test taken when driving to Woking: horse, 80; motor, 48. . . . In the case of trade vehicles, the removal of horses for war service will cause many people to turn to power traction; therefore, it is the power vehicle that has to be considered, and must be considered, when the

question is: How are the roads to be made fit for their purpose in such circumstances?"

Concerning the distribution of the cost of making and maintaining improved roads the article says that the Road Board is obtaining statistics of traffic with a view to classifying roads and formulating a better system by which the burden may be more equitably distributed than at present and that when a proper classification is provided there is no reason to doubt that the engineer will be able to give a specification for road construction which will make it certain that the main road of the future will be a dustless, mudless, smooth and durable way, and that the cost spread over a period of years will not be greater than—if so great—as now required to keep up a road passably good, but inefficient to a considerable degree in the qualities of a truly sound and efficient road.

The author of the article recognizes the fact that those roads in England which have been built with a good binding material have stood the tests of traffic and have been waterproof and free from the damaging effects of frost. He also expresses a keen appreciation of the admirable qualities of first-class road building when he says that the modern road can be made so compact by the use of a well-proportioned binding material that after being under traffic for two years or more it will be found "with every stone still in the exact position in which it was fixed at first laying; and so tenaciously are the stones held by the well-chosen binding material that if a block cut out of the road is broken in two it will be found that the stones are so firmly fixed that where the split comes opposite them they break across leaving one-half fixed in each of the two pieces of the specimen."

There could not be better evidence of the quality of our best road construction than this kind of a test; it shows what may be accomplished when the best men and the best materials are combined to attain the desired excellence.

THE SOLDIERS' CALL TO AMERICA TO WAKE UP.

WOULD you see war as the soldier sees it? Would you think of peace as the soldier thinks of it? Would you understand the sufferings of those who are dying to save civilization as our soldiers see them? Then read a letter from a New York major published in the Globe and Commercial Advertiser of that city.

When you have done so, perchance, you will begin to understand what our men are enduring and how little we at home are sacrificing or suffering in comparison with them. Our task is to stand behind these men in the buying of Liberty bonds and in contributions to the great organizations which are working to lessen their sufferings, but this is only a small part. Money counts for little as compared with lives.

The soldiers are giving their lives. We are investing in absolutely safe securities a small part of our incomes. They call upon us for more than money. They call for whole-hearted, unbending determination to stand behind them in order that they may know that the sacrifices they make are understood and appreciated, and that there shall be no peace with such a nation of criminals, who are murdering our men as they murdered millions of the flower of civilization of England and France and Italy and Serbia and Belgium and Russia.

May God grant that the people of America shall wake up, as this soldier writing from the battlefield calls upon them to do. The letter is as follows:

"At night sometimes when I have been at the front I have lain on my back, and looked at the stars and thought and thought and thought, and I have wondered what it was all about and for what. Why is there a world and why are we here? And what is life? I do not know, but in all the horrors of bursting shells, of hellish gas, of advances and attacks, of death and blood and screams of rage and of mortal pain and agony there often comes to me a kind of velvety peace. The noises of battle seem to dull and it seems that a Presence is with me, calm and serene. And there is no fear, only a seemingly peaceful lull. In the middle of scenes which no pen can ever describe my thoughts have turned away to home and to you. All the little things of life fade away, and what is left is love and no fear of death. There is something, intangible and elusive, that makes you know that death here is not

the end. And I am not afraid, dear, nor must you ever be. But, ah! surely the ones responsible for all this misery and suffering will be punished. That the idiotic, theatrical, vainglorious Kaiser has been able to educate and train a nation for fifteen years to obey his will, that he and his brood of degenerates could make the day what it is must merit some punishment greater than can be dealt out on earth.

"And I wonder where it will end? Has the whole Germanic race developed into a race of wild beasts? Or is it that the training of years for war will at last break under their punishment and will they rebel? I cannot answer. I have seen them in battle. I have seen them fight and kill even as we fight and kill. But I have not seen in them yet any conscience. They seem just a cruel, iron machine, with no more feelings than a machine, so long as they are in power. They torture, they kill women and children, they rape, they murder under official orders, and when they have the upper hand their overbearance is unbelievable. But—and it is this but that will finish them—they lack any feeling of conscience, humanity, love, anything you want to call it, while they are in power. But oh! how they change into snivelling curs when they are whipped."

"I have seen how bravely they will advance, their piggish faces lighted up with the desire to kill when they have been four or five to one. I have seen them deliberately butcher a little detachment they outnumbered. And I was in the counter-attack that went after these fiends in equal numbers. They played their machine guns and their rifle fire and we reached them. And how they threw up their hands and screamed 'Kamerad!' and begged for mercy. These, the same beasts that would butcher our little detachments; how they sang different when we had them! And it is that spirit on their part that will finish them. We cannot kill like that, no matter how much we want to. There is right, there is a God, and right and God will triumph in the end."

"Many of those you have seen and known in the last year have passed on. The picture of the old Second Company at Plattsburg is sadly diminished. Young men with everything in the world to live for have died that the world may live, and many, many more must also die. At Upton there arrived the first draft, and out of the clerks, drivers, laborers and all the mixed variety were made soldiers. And they have died and will continue to die, and others and still others must take their places, and I want you, for me, to join your voice to the voices of us over here, who know, for America to wake up."

"We want over here an army of 10,000,000 as soon as they can be raised, equipped and partially trained. We want every man, woman and child in America to work day and night for ships, for food, for clothing, for arms and ammunition, for the million things that go to make victory, and we do not want peace! We are dying and suffering, and we must not die and suffer in vain. Peace with Germany would mean Germany beginning the day after peace was declared for a new war! They would work again for years as slimsly as they have worked in the past to conquer the world, and it would be the same thing over again."

"We who are doing the fighting do not want peace. We who see our officers and our men dead and dying, we who suffer sometimes worse than it can be possible to suffer in hell, do not want peace. And the ones in America must not try and dictate in regard to something they know nothing about. I speak of the mass of people, many of them even now being German sympathizers. Our President, our army, know there must be only one end to this awful crime on earth, and that is the complete destruction of the brood of poisonous vipers that brought this on."

"That means the Kaiser (damn his name) and his breed, junkers and imperialism, and Berlin. It means the dictation of peace by the nations fighting for it and not the devils of the Hun backed up by his sympathizers in our country and weak-kneed sentimentalists. Oh, how I would like the latter class in America to see! How I would like them to be kicked about by concussions, see their sons, their brothers and friends being butchered by every infernal appliance the Hun ingenuity can improvise! But, no. That kind remain where there is no danger, and then do all in their power to make our daily sacrifices useless."

REPORTED POTASH DISCOVERIES IN CANADA SAID TO BE VALUELESS.

REPORTS were recently sent out from Canada that large potash deposits had been discovered in that country. Mr. Charles A. Bramble of the Free Press of Winnipeg, replying to an inquiry of the MANUFACTURERS RECORD on the subject, writes:

"The potash which it was claimed had been found in the Northwest does not seem to be of much commercial importance. It is very doubtful that the amount of potash will pay for extraction, though it is possible that other beds may be found which will give higher results."

On to Berlin and Unconditional Surrender should be our only answer to peace offers.

AMID THE CRASH OF THRONES LET US REMEMBER THAT JUSTICE DEMANDS PUNISHMENT.

BULGARIA, the robber nation which deliberately sold its soul to the devil when it openly announced its decision to ally itself with the side which made the largest promise of material gains to it, was the first of these murdering, robbing nations to surrender.

Austria, which for centuries has been the center of desperate, diabolical autocracy, which has practically enslaved millions of the people under its domination, which brought on the European War under an arrangement already made with Germany, has now surrendered.

Turkey, probably the most continually corrupt, besotted nation in the world's history, which through the centuries has persecuted the Armenians and murdered in cold blood millions of these Christian people, is likewise on the surrender list.

These three nations deserve no pity and no sympathy for all of the sufferings which they must now endure. They gladly joined with Germany in the conspiracy to destroy civilization, and on the wreck and ruin of millions of lives to build a stronger despotism, a despotism which has counted nothing except its own advancement, a despotism which has never hesitated for a moment to slaughter men and women with ruthless disregard of all that is high and holy, merely for the purpose of cementing through the blood of the martyred ones what they thought would be a firmer foundation for the throne of autocracy. For these nations there should be no feeling of pity, any more than we should have for the vilest criminal, who after years and years of criminality finally reaches his limit and is caught in his red-handed crimes.

Germany has not yet surrendered. Many are looking forward daily expecting that Germany will accept the terms which have been laid down. Others, and these include some of the best informed military men of the country, believe that Germany is simply playing its game, hoping by the prolongation of the war to produce some dissension or some neurotic sympathy which will enable it to have its representatives at the peace table and secure by chicanery and diplomacy what it has not been able to win on the battlefield.

Germany is unconquered in spirit and unrepentant, and only awaits the opportunity, if we are foolish enough to grant it that chance, of continuing its campaign of education and of military preparedness in order that some day, whether that be twenty years hence or fifty years hence, it may again undertake to conquer the world.

Germany knows no thought of penitence. No one can possibly tell which report that comes out of Germany is a lie and which is the truth, for the world has learned to realize that all Germans are liars, that it is a nation built on a lie, and that, as Bismarck admitted in his Memoirs, he lied in order to bring on the Franco-Prussian War, so that Germany has been lying ever since, lying in diplomacy, lying in commerce, lying in all that it has done for the purpose of making ready for this war. These reports from Germany indicate that the Kaiser still expects to retain the throne; one suggests that he is willing to have Germany turned into a republic, providing he can be the president; another is that much of his personal baggage is being shipped into Switzerland and carried to a beautiful place owned by a German and over which the German flag is said to fly. Another report has it that the King of Bavaria claims the right to the German throne, if the Kaiser abdicates.

If these reports be true, they only indicate that Germany has not yet seriously understood that the destruction of the whole power of Germanism must be brought about and that the rulers must be punished as criminals if civilization is to be preserved. It is almost inconceivable that any nation should be so absolutely lost to all moral sensibilities as is Germany, when in this time of defeat, of the crushing of its vast ambitions, it should be seriously discussing who is to dominate the country and how German unity can be maintained and the nation strengthened for the future.

Bulgaria, Turkey and Austria are no longer in the struggle. They must now pay the price for their crimes, and Germany must inevitably follow. Whether it holds out a few weeks or a few months

longer, its doom is sealed and the death penalty must yet be written for the criminal leaders of that nation, and, perchance, the Kaiser, instead of seeking a retreat in Switzerland or the presidency of a German republic, and the King of Bavaria, instead of asking for the German throne, may hang high on the gallows as some atonement to the extent of their lives for the millions of lives murdered through their work.

What a tremendous pall of woe and agony is being lifted from the hearts of England and France and Belgium and Italy and Serbia. For four long years these nations lived in worse than the agony of death. They saw their loved ones destroyed. They saw womanhood dishonored. They saw a thousand battlefields fertilized by the bodies of millions of the flower of civilization. They saw rivers choked with the bodies of the dead, and by day and by night they have grappled with the fearful Tiger Beast of Central Europe.

We have known nothing of war and its horrors. We have fought a great fight at the last moment, and some thousands of our superbly heroic men have laid down their lives in defense of civilization, and other thousands have been wounded. Their loved ones at home have endured the agony of their sufferings and their death, but as a nation we have scarcely known sorrow. We have scarcely known any privation. We have endured practically none of the great hardships and sufferings of our Allies, whose work saved us from destruction.

Instead of boasting of our achievements, glorious as they may be, we should stand with heads uncovered before that most marvelous, sublime figure in human history—France; before murdered Belgium, which preferred to die rather than to sell its honor; before England and its colonies, who heard the call of God and of civilization and rushed to the defense of honor, counting not the cost in lives or money. England, the great civilizing power of the world, through the centuries, bringing law and order wherever her flag flies, should be dear to the heart of every honest-hearted American. Italy, which sought the path of duty rather than the path that seemed to lead to victory, threw its lot with the Allies, when, if it had allied itself with Germany, it might have changed the destiny of the world to its own enrichment. Serbia, the unwilling cause of the war, because it stood in the way which blocked Germany from its plan to dominate the East and the Orient, looked one time as though it would never again be able to assert itself, for destruction seemed to have marked it for its own, but Serbia heroically returned to the struggle and has been a great factor in final victory.

As we contemplate the defeat of this conspiracy of Germany and its allies to murder and to loot the world, as we remember that the atrocities committed were definitely planned for the purpose of frightening the world, let us steel our hearts against any peace which does not impose upon these criminal nations a full measure of punishment to the extent of human power to inflict it for all their fearful crimes.

A CORRECTION AS TO STATEMENTS ABOUT FIRMS HANDLING PLATINUM.

IN August last the MANUFACTURERS RECORD published from the Chemical and Metallurgical Engineering some statements in regard to the platinum situation, mentioning in connection therewith Johnson, Matthey & Co., Ltd., of London; Charles Engelhard, and Baker & Co., Inc., of Newark, N. J. The statements from the Chemical and Metallurgical Engineering alleged a pro-German connection or interest in reference to these firms and activities in platinum.

We are advised that these statements are entirely incorrect in suggesting these people were influenced or controlled directly or indirectly to any extent whatever by German ownership, money, credit or connection. In letters to the Chemical and Metallurgical Engineering Baker & Co., Inc., and Mr. Charles Engelhard wrote as follows:

Editor Chemical and Metallurgical Engineering:

Sir—I desire to protest most energetically against the reference to me contained in your recent editorial, entitled "Germany's Finger in the Platinum Pie," and I submit that such an article should not have been published without giving me an opportunity to enlighten you in regard to the matters referred to therein, as to which you confess ignorance.

I did not come to this country as the emissary or agent of anyone. I have been connected with Baker & Co., Inc., and the American Platinum Works since their organization, and no German capital was ever employed directly or indirectly in their expansion, unless a former one-fifth interest in their capital stock can be so regarded.

As to the Draper incident, which you feature so prominently in your article, I would state that my advice was not asked in the matter, nor offered, nor had I at that time even met Mr. Summers.

I have lived in this country for over 25 years, have been an American citizen for many years and yield to no one in my admiration of our laws and institutions. I have never served in any official capacity to our Government, and, like any other loyal American citizen, have answered in the most conscientious manner only such questions as were put before me, thus endeavoring to give to our Government the benefit of any special knowledge I might possess in regard to platinum.

I have nothing to fear or conceal. My record is well known to our Government, and I demand only justice from my fellow-citizens.

CHARLES ENGELHARD.

New York.

Editor Chemical and Metallurgical Engineering:

Sir—Your editorial entitled "Germany's Finger in the Platinum Pie," which appeared in your issue of August 15, in so far as it suggests that the undersigned company has been or is subject to German influence, is unjust, misleading and directly contrary to facts. None of our stock is now owned, or since nearly a year previous to our entry into the war has been owned by any German or ally of Germany, nor does any enemy or ally of an enemy influence or control our management, directly or indirectly, in the slightest degree.

At no time in our history has any German interest owned more than one-fifth of our stock, nor did such stock exercise any special influence in our management, nor has German capital or credit contributed in any other respect to our expansion or growth. On the other hand, we include among our largest stockholders Mr. Charles W. Baker and the Estate of Mr. Cyrus G. Baker of Newark, the well-known English firm of Johnson, Matthey & Co., Ltd., and the French firm, rue Quennessen, de Belmont, Legendre & Co. The Bakers are of old American stock; Johnson, Matthey & Co., Ltd., are the direct representatives of the British Government as regards platinum, and needless to say would not be associated with any pro-German interests in this country.

BAKER & Co., Inc.

Newark, N. J.

Editorially commenting on these letters, the Chemical and Metallurgical Engineering states that since their article was published they have had an opportunity to secure additional information on the subject, and said:

"GERMANY'S FINGER IN THE PLATINUM PIE"

"Editorial comment under this caption in our issue for August 15 has been the subject of some criticism, particularly as relating to Mr. Charles Engelhard and his business associates. Needless to say, our opinion then expressed was based on what we believed to be authentic and reliable information. As to that part of our remarks suggesting the possible influence of Mr. Engelhard in fixing the price paid by our Government for some 20,000 ounces of platinum brought from Russia, he himself has already entered a denial which we have published and accepted at its face value.

"Since that time we have had an opportunity to gain additional information from sworn statements of Mr. Engelhard, in which he disclosed the details of his relations with the German house of Heraeus and the former interest of Heraeus in the American Platinum Works and Baker & Co. These affidavits show that the German interest in these American platinum corporations, as represented by Heraeus, amounted at one time to 51 per cent., but that about April, 1916, or nearly one year prior to our declaration of war with Germany, Mr. Engelhard acquired the entire Heraeus interest in the two companies. Since that time it appears that there has been no enemy or ally of enemy interest in either of them. We are further advised that Mr. Engelhard has caused a minute to be entered on the records of the several companies in which he is interested, to the effect that he will not recover any stock to Dr. Heraeus at the close of the war without unanimous approval of all the stockholders of record.

"It appears that Mr. Engelhard has been fully investigated on these points, as well as on his entire business career in this country, by several branches of the Government. Unfortunately, the Government does not officially announce the results of such investigations nor publicly state its opinion regarding the loyalty of the individuals investigated. As one official explained it to us, the evidence is presumptively in the individual's favor if no action is taken against him. Thus, while we have been unable to secure from any official or agent of the Government any statement as to the result of the investigations, we presume it was favorable to Mr. Engelhard and satisfactory to the Government. Since there was no malice in our original remarks nor any desire to do injustice to Mr. Engelhard, we are glad to correct any false impression we may have created as to his loyalty or the German control of his companies."

Having published the first editorial of Chemical and Metallurgical Engineering on this matter, the MANUFACTURERS RECORD takes pleasure in giving equal publicity to these statements, since it would deplore giving publicity that charged any patriotic man with even a tinge of pro-Germanism.

Individual Responsibility in Coal Mining Operations

HOW CONNELLSVILLE INCREASED THE MORALE AND OUTPUT OF ITS INDUSTRIAL SOLDIERS.

By J. FRED SHEAN, Uniontown, Pa.

The Gospel of the Personal Touch, the call of individual responsibility in winning the war and the exemplification of the finest principles of democracy for which the civilized world is fighting have wrought one of the industrial miracles of the war in the great bituminous coal fields of the Connellsville coke region. Like many other industrial establishments, the Connellsville region is one great mill, with a mixture of races and creeds and customs which find their counterpart in every corner of this old globe; a generous sprinkling of men and families of enemy alien extraction who came here to escape the oppression which precipitated the world conflict. When the regional fuel administration took charge of the Connellsville region it faced the task of bringing to this huge melting pot the duties and needs of the men charged with digging the coal and drawing the coke that now is represented in every other shell fired on that flaming cauldron in Europe.

The result of that campaign of education, and no other term correctly characterizes it, has been that in the five or six months since the regional fuel administration assumed charge of the region the weekly production in terms of coal has been increased 100,000 tons. An intensive campaign is now under way to add another 50,000 tons to this figure, which will put the weekly production of coal well over 800,000 tons from Fayette county alone. The first steps introduced by the regional fuel administration were speechmaking by expert coal men and returned soldiers from the west front, through which the workers of the region were acquainted with their duty as members of the army of industry of the United States. This was followed by the compilation of idle men reports, through which the names of men failing to work regularly were reported to the regional headquarters here. This resulted in personal letters from manager of production W. L. Byers, pointing out that the country needed the results of their labor; that it was injurious to their health and detrimental to the nation's war efforts for them to drink and carouse. Where there was sickness or distress in the families or other troubles, field agents of the administration called and talked the situation over. With the recalcitrant workers, calls by members of the Pennsylvania State constabulary usually had a wholesome effect.

Names of men who failed to report regularly are posted on bulletin boards at the various plants, while honor rolls of men who work regularly and produce their maximum output are also maintained. Great care was exercised in establishing this system of posting of names, and the benefits were quickly apparent in increased individual efficiency.

The gospel of the individual responsibility has been a potent factor in the situation in this region. Operators and workmen alike have been brought to realize the necessity for maximum production of clean fuel, and in a few instances where dirty coke and coal have been shipped heavy fines imposed by the fuel administration have brought the operators quickly to time. In this phase of the campaign the workers have been shown what their individual day's work means to the great war machine; how many shells their four or five or six and seven wagons of coal will produce; how much T. N. T. can be produced through the by-products; how, in the aggregate, a slowing up by the individual workers in the region will affect the reserve supply of shells and steel for railroads and other war demands which General Pershing must have during the winter and next spring to do America's military share in putting the final touches on the defeat of militarism.

One of the great problems of the campaign was to convince workers in draft ages that their duty is at home in the mines rather than on the battlefield. Cooperation of local and district draft boards was secured, and finally small cards testifying to the individual's efforts at home and of the demand that he remain at his job were made out individually to each man given deferred draft classification. These cards are made out in the local headquarters of the fuel administration, and bear the signature of Dr. Garfield and national production manager James B. Neale.

Other disturbing factors of grave concern are the liquor problem, car shortage and deficiency in electric power to meet the growing needs of the region. Officials and operators declare that their contention that sale of liquor in the region means a loss of from 10 to 30 per cent. in individual efficiency is borne out by the production figures for the week ending October 12, when all records were broken. This was the first week in which saloons, distilleries and breweries were closed because of the Spanish influenza epidemic in the State. The increase of 21,547 tons over the preceding week is attributed almost entirely to the limited prohibition during the week, for considerable intoxicants were shipped into the region. The production for the weeks of October 19 and 27, however, is shot to pieces as a result of the influenza epidemic and car shortage. The car shortage situation parallels that of last March, and is due to the inroads upon railroad employees by influenza. Shortage of cars, however, has caused the region concern throughout the summer in more or less degree. Railroad companies are making elaborate plans to meet the situation which will result from cold weather, and it is hoped that a winter tie-up like that of last year will not be duplicated.

Coal and coke companies are given preference in the use of electric power in the region, and for the most part the power has been adequate; the past few weeks, however, there has been a shortage causing grave concern.

The fuel production committee, comprising some 200 men, with appointees at each plant in the region, is doing a great work of which little has been said. These men have worked and are working quietly among the men of their respective plants; are preaching the gospel of safety first; are keeping the machinery of their plants in perfect condition; are taking the necessary steps which prevent, as far as is humanly possible, minor and major accidents which would cause a tie-up in the plants and thus loss in production. They cooperate, too, with the production inspector, who visits almost daily each plant, calls upon the workers and convincingly and earnestly assists them in settling their problems. Not infrequently he visits the home or boarding-house of the workmen, and it has been found that the women have a wonderful influence on the men and often decide that a man will go to work who is in doubt about the matter himself.

The regional fuel administration is composed of C. E. Lenhart, chairman, and R. M. Fry of Uniontown and J. M. Jamison of Greensburg. W. L. Byers, as production manager, is in active charge of the production campaign in Fayette county. Mr. Byers succinctly summarizes his work in two paragraphs, which are herewith presented:

"We are keeping constantly before every operator and manual worker the fundamental fact that Connellsville coal and coke are vital to the victory of the war as a uniformed soldier. The idea that the coal and coke workers of the country form an auxiliary division of the army in France has been impressed by every possible means. The shame that would attend the failure of the Connellsville Region Brigade of the Industrial Division of the United States Army failing in its full duty has been driven home by every agency at our command. Operators and superintendents have been brought to realize that never before has there been an emergency which called for concentrated energy and 100 per cent. attention to the job in hand as insistently as does the nation's need of victory.

"In our dealings with the men we always proceed on the basis that they are responsive to the same stimuli as we are. We treat them as we would want to be treated if our positions were reversed. What is more, we convince them that we are treating them this way. 'Strong-arm' methods which were used by some superintendents against our judgment proved a complete failure. There is no bullying in the regions now. We go to any length to reach a man; we never overlook an opportunity to meet one and make a friend of him. We encourage the workers to bring their troubles to us, and do our best to relieve them in a practical way."

Students of race complications will find much room for study and interest in the manner in which the foreign-speaking peoples of the region have responded to the call for fuel. A large proportion of the workers are foreign, and many are of Austro-Hungarian extraction. However, they have proven their loyalty by their works, and other workers are meeting them as comrades in arms. The recognition by the United States Government of the Czechoslovaks as an independent nation had a wonderfully stimulating effect in the region; for it brought more than ever closely together those nationals of oppressed peoples of the dual monarchy and the nationals of our allies in arms.

And the Connellsville region rapidly and steadily forges ahead in its fuel production; in its financial war work, for it has in its possession more than \$25,000,000 worth of Liberty bonds and other Government securities; in the Red Cross and every other war agency.

Boys' Pig Clubs Expected to Help in 50 Per Cent. Increase in Pork Production in Mississippi.

Jackson, Miss., November 1—[Special.]—Boys of Mississippi will do their share toward increasing pork production in the State 50 per cent. in 1919, according to C. A. Cobb, head of the boys' club forces, who has on foot a scheme for the formation of War Pig Clubs, in which he expects to enroll thousands of youngsters in all sections of the State.

The scheme has already been worked out and arrangements made for its financing. Boys will be furnished pigs this fall, which will be fed under the direction of county agents, and next spring a week will be set aside for the shipping of these animals.

Mr. Cobb is confident that enough pigs can be prepared for market to monopolize the St. Louis buyers' attention for one entire week, and is planning to get top price for the lot of hogs. Good pigs will be distributed, and they will be given excellent care.

There are already 10,000 boys in the State who are members of Pig Clubs, and it is expected that at least \$25,000 will be enrolled in the new organization. This year one county, Carroll, shipped 24 carloads of hogs to market one day by means of a Red Cross Pig Club proposition, and Mr. Cobb believes his scheme will work equally as well.

The entire State has been asked to increase pork production next year 50 per cent., and the boys have been allotted 10 per cent. of this as their share. In addition to aiding materially with the food production campaign of next season, the boys will make money to invest in war securities and to give to war funds of different sorts.

Boys' clubs in the State have never yet failed in an undertaking, and Mr. Cobb is confident the movement of hogs from the State during shipping week next year will be the largest by far from any Southern State in history.

Plans are rapidly taking shape all over the State for increased food production next season.

J. Ed Ruff, district demonstration agent for South Mississippi, is waging a campaign for the saving of velvet-bean seed for next season, as he considers this the most valuable legume grown in the State, and a large factor in war-time food production. He urges that farmers plant larger acreages next season than ever before, so as to have plenty of forage for cattle and hogs next fall.

Velvet and soy beans are both prime favorites in all parts of the State, and farmers who have planted them to feed to the hogs in the fields or who have gathered them and sold the seed, hogging down the vines, have all made money. Both are drought-resisters, and furnish the bulk of the State's forage crop this fall.

Rains and warm weather have made the late hay crop good, and many farmers are gathering in native grasses to winter their cattle on, when it looked for some time as if they would have to buy feed, even roughage, for them.

With a continuance of high prices for cotton and all other farm products, farmers in all parts of the State are in first-rate condition for a big year next season. Much of the extra money they have this fall is going into the purchase of good brood sows and good cattle.

The dairy industry is thriving as never before. Twenty-odd modern dairies are running every day, and all paying dividends, besides providing convenient markets for the milk and cream the farmers' herds produce. There will be an increase in dairy products production next season to equal the general increase in foodstuffs.

Problems to Be Faced After the War

[Special Correspondence Manufacturers Record.]

Washington, D. C., November 2.

The war is not yet won, and until the victory has been attained there should not be too much stress placed upon what is to follow the signing of the peace treaty. Nothing should detract from the energetic military campaign and the maintenance at full speed of the industrial work at home which keeps the army in the field.

Nevertheless, the unpreparedness which found the nation unequipped for war must not have a counterpart in an unpreparedness for peace. With the doom of the Central Powers now only a matter of time, it is natural that in the United States there should be a questioning as to what is to follow the war. In each of the Allied countries the question has been under consideration for some time, and the fact that plans are now being formulated by far-seeing men in this country is not to be taken as any evidence of slackening in the war pressure.

Already in Congress the two political parties have presented plans which are aimed to meet the problems which will arise with the return to peaceable conditions. In their fundamental purpose they differ less than in the manner of administration.

The Joint Congressional Committee on Reconstruction proposed by Senator Weeks of Massachusetts, composed of six Senators and six Representatives, is intended to investigate and report to Congress on the economic changes incidental to a change from the activities of war to the pursuits of peace. These members of the committee are to be chosen at the party conferences.

In the plan presented by Senator Overman, and known as the Administration measure, the chief difference lies in the fact that the President is empowered to appoint the five members of a Federal Commission on Reconstruction. The Democrats have expressed the conviction that the reconstruction matter is one of executive function rather than legislative function.

Without any reference to the respective merits of the two plans, it must be said that the matter of preparing for reconstruction is one which should be neglected no longer, and that if the United States is to retain the commercial advantages developed during the war a tangible plan must be adopted and a survey begun as is being done in all of the European countries.

The fact that in Germany there is under way the most elaborate scheme of any nation for post-war trade development, by which the Huns hope to regain a place in the sun, is in itself a sufficient reason for prompt action.

Germany throughout the war has kept steadily at the work of turning out the articles "made in Germany" with which she once flooded the markets of the world, and which she intends to release again when the war is over. While her shipyards have been busily engaged in constructing submarines intended to destroy the merchant fleets of her adversaries, she has been building her own merchant ships which were to take their place in the visionary scheme of a world dominated by Germany.

How much of the stored-up power will be left to the Germans will only be determined by the peace terms, but it nevertheless behooves America and her Allies to be prepared to resist the commercial drive which will begin just as soon as the Germans are able to put their resources to their old uses.

One of the most important questions which America will have to consider is that of the shipping interests brought into existence by the necessities of the war, fostered under the Government and now owned to a great extent by the Government. The vast shipyards of the country can hardly maintain their present standard of production under the Government in times of peace. Some of them will have to be disposed of, and at the same time, with the greatly-increased tonnage, new markets must be made available for American goods which have so increased in production.

The demands of Europe since the war, it is said, have resulted in increasing the productive capacity of the United States from 25 to 50 per cent. Either these plants must keep up their output or a plan must be formulated which will permit a gradual reduction, or there will be a sudden termination of prosperity, with even the prospect of an industrial collapse. Many

plants have been built up to supply purely war needs. Some means must be at hand to adapt these to changed conditions to keep the workers from being thrown out of employment. On every hand there will be factories and plants whose reason for being has been summarily removed.

These are a few of the problems which will confront the United States at some time in the future, but how far away it is still impossible to say. They must be confronted, however, and the Federal Government may as well prepare now.

Secretary Lane has already suggested that the public lands may be occupied by the returning soldiers and sailors, and while this will commend itself to some of the men, the majority are not acquainted with the life of a farmer, the lands which they would occupy are still more or less in a virgin state, requiring extensive improvements before they would become available for cultivation, and that any large percentage of city-bred men will forswear their former occupations and turn to the land is hardly to be expected. There will be approximately 5,000,000 soldiers returning to civil life. Their places for the time being have been filled by new workers. Women have entered fields hitherto left entirely to male labor, and many of them will not return to the domestic life. They will remain as the successors or the competitors of the men. Some system of labor employment and distribution must be evolved to meet these new conditions.

The questions arising out of Government operation of the railroads, the telephones and telegraphs are certain to be full of momentous possibilities requiring the most careful consideration in either the turning back to private owners or the continuance of governmental control. Some distinct modification in the policy toward the railroads will be necessary in order to bring them to the most efficient service.

The advisability of continuing price-fixing after the war will lead to much debate, and in the event that the policy adopted for war purposes is carried over into peace times, there will be necessarily a readjustment to meet changed conditions which should go more deeply to the roots of the subject than has the price-fixing program operative during the war.

These are just a few topics with which any commission on reconstruction will have to deal. Countless others will arise, but they are sufficient to indicate the mammoth proportions of the task of readjustment and reorganization which will confront the United States. That the entire world will be struggling with many of the same problems will in a measure simplify the situation for the economic rebirth. At the same time, those nations which have made preparations well in advance and which are equipped to take the lead will have an advantage over the unprepared which will be of untold value. The United States cannot afford to be among the laggards.

How the South Can Greatly Increase Its Corn Crop.

Arcadia, Fla., October 29.

Editor Manufacturers Record:

Your editorials and the article by Rev. Dr. Hillis in the issue of October 17 are heartily endorsed and appreciated. In fact, every issue of the MANUFACTURERS RECORD is read with greater interest than any publication that comes here.

The hour of destiny is surely striking. It is the sincere desire of all true Americans that no conditions of peace will be entertained by the Allies except "unconditional surrender" of Germany and her allies.

One of the serious problems confronting the United States at this time, however, is the increased production of essential food products in 1919, if millions of people, mostly women and children, in those countries devastated by the heartless Huns, are to be saved from starvation.

With a decreasing supply of labor for agricultural purposes it becomes necessary to increase the yield per acre of staple food products, which requires no increase of labor.

Corn is the greatest essential food product in the world, and is used in a greater variety of ways as food for man and animals than any known product. It is possible and practicable to increase the yield of

corn per acre from 25 to 50 per cent. by using carefully selected, properly graded and tested seed, and properly spaced when planted in accordance with the requirements of the plant and fertility of the soil.

If this plain, common-sense method could be applied to the production of corn in 1919 in the Southern states, which is the most favorable section of the United States for increasing the yield of corn per acre, it would result in an increased yield of several hundred million bushels with no increase in the acreage planted and no appreciable increase in the labor or other expense of production.

The writer, having been born and raised on a farm in the greatest of all corn-producing states—Iowa—began the work of raising corn and selecting the seed on the stalk in the field when a boy, a good many years ago, and has had many years of practical experience, study and observation in corn production, in selecting, grading and testing of seed; also some experience in seed breeding, and is thoroughly convinced that the statements herein made are sound, conservative and correct.

This is submitted with the desire that others may profit by my experience and that our nation will prove to be the savior of civilization, utterly defeating the heartless and barbarous Huns so they will never again disturb the peace of the world or be permitted to commit further atrocities.

B. M. ANDERSON.

Southern Industrial Activities.

During October the Construction Department of the MANUFACTURERS RECORD published 2685 items relative to industrial, building, financial and railroad operations, and general business interests in the South and Southwest. These have appeared in the Daily Bulletin and later in the MANUFACTURERS RECORD. For the preceding nine months 31,574 items were noted, thus making a total of 34,259 published during the 10 months of this year.

In the accompanying table items for October are detailed under appropriate headings, as are also the totals for the 10 months.

		Total for October	Total for 10 months
Industrial Developments.			
Airplane Plants, Stations, etc.	54	54	54
Bridges, Culverts, Viaducts.	16	16	16
Canning and Packing Plants.	2	2	2
Clayworking Plants.	3	3	3
Coal Mines and Coke Ovens.	55	55	55
Concrete and Cement Plants.	17	17	17
Cotton Compresses and Gins.	11	11	11
Cottonseed-oil Mills.	5	5	5
Drainage Systems.	11	11	11
Electric Plants.	35	35	35
Fertilizer Factories.	4	4	4
Flour, Feed and Meal Mills.	47	47	47
Foundry and Machine Plants.	65	65	65
Gas and Oil Enterprises.	1	1	1
Hydro-electric Plants.	10	10	10
Ice and Cold-storage Plants.	4	4	4
Iron and Steel Plants.	14	14	14
Irrigation Systems.	50	50	50
Land Developments.	7	7	7
Lumber Manufacturing.	32	32	32
Metal-working Plants.	42	42	42
Mining.	41	41	41
Miscellaneous Construction.	28	28	28
Miscellaneous Enterprises.	12	12	12
Miscellaneous Factories, etc.	10	10	10
Motor Cars, Garages, Tires, etc.	12	12	12
Railway Shops, Terminals, Roundhouses, etc.	12	12	12
Road and Street Work.	26	26	26
Sewer Construction.	8	8	8
Shipbuilding Plants.	27	27	27
Telephone Systems.	2	2	2
Textile Mills.	49	49	49
Water-works.	20	20	20
Woodworking Plants.	11	11	11
Buildings.			
Apartment-houses.	50	50	50
Association and Fraternal.	47	47	47
Bank and Office.	28	28	28
Churches.	15	15	15
City and County.	5	5	5
Courthouses.	250	250	250
Dwellings.	95	95	95
Government and State.	38	38	38
Hospitals, Sanitariums, etc.	25	25	25
Hotels.	31	31	31
Miscellaneous.	16	16	16
Railway Stations, Sheds, etc.	96	96	96
Schools.	73	73	73
Stores.	13	13	13
Theaters.	13	13	13
Warehouses.	60	60	60
Railroad Construction.			
Railways.	11	11	11
Street Railways.	2	2	2
Financial.			
Corporations.	58	58	58
New Securities.	139	139	139
Machinery Wanted.			
Machinery, Proposals and Supplies Wanted.	350	350	350
Fire Damage.			
Fire Damage, etc.	163	163	163
Totals.	2,685	2,685	2,685

Ground Phosphate Rock as a Fertilizer

Mt. Pleasant, Tenn., October 22.

Editor Manufacturers Record:

Your October 10, 1918, issue contains another one of the many wastes of good white paper and expensive printing ink which have been perpetrated by the fertilizer manufacturers in fighting the direct use of ground phosphate rock without acidulation during the 22 years that have elapsed since the first year's output, consisting of one car of this material, was shipped from Tennessee for this purpose.

That one car has grown during that time to whatever the amount may be, which your correspondent "generously" designates as 150,000 tons.

There has never been a time during that 22 years when the whole weight of influence of the fertilizer trade has not been strained to breaking point to protect the farmers from the ravages and inroads of the desperate characters who were trying to induce them to use raw ground rock.

During all that time experiments have gone on at different stations, and actual use of the material has been made over periods of years by farmers in many States. The largest customers on the books of the company I am connected with are also for the most part the oldest.

Last June the Journal of Industrial and Engineering Chemistry published a paper by Messrs. Wm. H. Waggoner and C. R. Wagner of the Bureau of Soils, United States Department of Agriculture, from which the following is extracted:

"It must be admitted, however, that most of the phosphoric acid contained in practically all productive soils is in the form of relatively insoluble phosphates of lime, iron and alumina, yet many of these soils continue to yield large crops without the addition of any soluble phosphates and frequently give no response to such applications.

"The question is, therefore, will raw rock phosphate increase the yield of crops when applied under proper conditions, and if so, is the increase obtained commensurate with the cost of the materials. . . .

"No one questions the fact that fineness of division facilitates the solubility of mineral matter. . . .

"In the early experiments conducted with this material strict attention was probably not given to this important factor, and it is very likely that a great deal of work with raw rock phosphate resulted adversely on this account. . . .

"The experiment station literature contains the results of 232 field experiments and 23 pot experiments conducted with raw rock phosphate, yet unless the relative merits of these experiments are very carefully weighed, they cause the reader much confusion and lead to the conclusion that raw rock phosphate is of very questionable agricultural value.

"It is now a generally accepted fact, however, that field experiments must be conducted for a period of several years before the results can be seriously considered, so after a careful study of the work recorded by the stations, the writers decided to give detailed consideration only to those field experiments which were conducted for five years or longer. . . .

"The remaining 37 experiments (conducted for five years or longer) were then given detailed study. Out of the 37 tests in Table I, 22 were carried on with a view to comparing the relative merits of raw rock and acid phosphate. The conditions under which such a comparison was attempted varied greatly, but it may be said that in a general way 13 of these experiments, or 59.1 per cent., gave crop yields as favorable to raw rock as to the more soluble form of phosphoric acid.

"After carefully weighing the results of all laboratory, field and greenhouse experiments with raw rock phosphate, the writers feel that the following general conclusions are justified:

"1. Field experiments conducted for only one or two years, where the various fertilizer treatments are not replicated or where no index is given to the relative natural fertility of the various plots employed, have little or no meaning.

"2. Liberal and even medium quantities of raw rock phosphate to most soils produce an increase in the yields of many crops the first year of its application.

"3. The effectiveness of raw rock phosphate depends largely on its thorough distribution in the soil, this distribution being brought about by liberal applications of very finely-divided material and thorough cultivation.

"4. The presence of decaying organic matter in the soil increases the effectiveness of raw ground rock phosphate, due probably both to greater bacterial activity and the higher content of carbon dioxide in such soils.

"5. As a corollary of 3 and 4, the effectiveness of raw rock phosphate is usually increased after remaining in the soil for a year or more.

"6. Most crops respond more quickly to applications of acid phosphate than to bone, basic slag or raw rock phosphate. Therefore, where the early stimulation and quick maturity of the crop are the main consideration, acid phosphate is probably the best form of phosphoric acid to apply.

"7. Field experiments in which raw rock and acid phosphate are compared on the basis of equal applications of the two materials or on equal applications of phosphoric acid in the two forms result often in favor of acid phosphate (particularly when such experiments are conducted for a short period), since in order to get the maximum benefit from the natural phosphates, they must be applied at a rate far exceeding that at which acid phosphate proves effective.

"8. The question whether increases in yield can ordinarily be produced more economically by applications of the soluble or relatively insoluble phosphates must be considered in a measure a separate problem for each farmer, since it depends on a number of factors, of which the most important are the nature of the soil, the crop system employed, the price of the various phosphates in each particular locality and the length of the growing season."

("This article is a summary of an exhaustive investigation of the subject made by the Bureau of Soils. The details of this investigation will appear in a later publication.")

Influence was successfully brought to bear to prevent the publication of the above as a bulletin, thus preventing the farmers of the land from having at least that much access to the truth and the light of experience. Publication of the results of all tests that had been recorded in the United States of five years' duration might have given more dependable information to farmers of the United States than your correspondent's ex parte selection of individual unfavorable results which probably form the exceptions needed to prove the rule.

The whole trouble, in my humble opinion, is due to the persistent obsession of the fertilizer people that some real danger will be done their pet acid phosphate business by the use and sale of ground rock.

I venture, without fear of successful contradiction, the assertion that no material amount of acid phosphate or complete commercial fertilizer has ever been or ever will be sold to the class of farmers who are the real customers for ground rock, and who get the real lasting results from it.

The farmer who can afford to purchase in carload quantities and apply to his soil while it is still good and in a high state of cultivation nature's own prescription for permanent fertility, which she has illustrated so forcibly in the bluegrass regions of Kentucky and Tennessee, is the real permanent customer of the ground rock man. The cotton or other cropper on land which without fertilizer won't even raise a disturbance is the big bulk customer of the acid phosphate and commercial fertilizer manufacturer. One is able to deposit slowly available plant food in his soil for near and remote future needs and the other wants, and must have, results right now in the immediate present.

Your correspondent's tears over the lack of conservation in using ground rock for any other use than to make two tons of acid phosphate from one ton of rock are either crocodilian or tears of ignorance. The producer of 70 per cent. ground rock can use from his deposit for every ton which individually would analyze above 70 per cent., another ton of equal amount below 70 per cent. The rock used by fertilizer manufacturers to make acid phosphate must grade 75 per cent. B. P. L., and the individual particles of material making up such an average grade will analyze from 70 to 85 per cent. B. P. L.

For each ton of such material prepared there is actually thrown away by those who are producing for the acid phosphate trade at least one, and maybe two, tons that would make with the ton saved two or three tons of 70 per cent. ground rock. The 70 per cent. ground rock contains actually 14 per cent. of phosphorus; the 16 per cent. acid phosphate contains 7 per cent. phosphorus.

phorus; the 16 per cent. acid phosphate contains 7 per cent. phosphorus.

For the 25 years the Tennessee field has been operated the fertilizer manufacturers have constantly forced the miners to produce highest possible grade, when all the time they knew that the real grade of the field was lower, and thus they were forcing the throwing away of the larger portion of the available tonnage, and all the time they were not really in need of the high grade to get desired results, as they make from 68 per cent. Florida or 68 per cent. Tennessee blue rock the same grade of 16 per cent. acid phosphate. They are, however, able to use more filler and leave a higher content of moisture in the ultimate goods if high-grade rock is used.

It ill behooves any advocate of the fertilizer manufacturer to now spring the plea of conservation of rock supplies, in view of the history of their actions for the past 25 years. If both sides will stop the silly twaddle as to the disadvantages of either's product and bend every effort to seeing that every possible ton of each product is used, and each in its right and proper place, the net results will be:

1. Real conservation of "one of the nation's greatest assets."

2. Widest possible distribution into the hands of the farmers of the country of the greatest possible number of units of necessary phosphorus, hence greatest possible accomplishment towards winning the war, and at the same time providing for peace.

3. The present small production of phosphate rock of low grade used for direct application, increased by the use of the enormous amounts now being forced to be thrown away by unnecessary high requirements of the acid phosphate maker, will make both sides to the controversy rich and still leave the same amount now put into acid phosphate available.

So ardent an advocate of the best interests of our Southern country as your splendid journal cannot fail to see the force of the situation as pictured above.

H. D. RUHM,
President Ruhm Phosphate Mining Co.,
Vice-President Calco Chemical Co.

Completing Plans for Enormous Pipe Line Extension.

Austin, Tex., November 2.—[Special.]—It is authoritatively announced that the Prairie Pipe Line Co. has selected sites for four pumping stations upon the route of the 12-inch oil pipe line that it is to construct from Ranger to Pelican Island, Galveston, a distance of approximately 325 miles. These pumping plants will be located at Cypress, Bryan, Hico and Ranger. Because of the fact that the pipe line will be the largest in diameter or capacity ever put down in this country, the pumping stations will be of unusually large size, it is stated. At each pumping station one or more steel storage tanks of 55,000 barrels capacity will be erected, and at the deep-water terminals on Pelican Island 12 of these big tanks will be built. The company will erect seven steel storage tanks, each of 55,000 barrels capacity, near Virginia Point, on the mainland, just across the bay from Galveston. The survey for the proposed pipe line is now well under way. The main offices of the Prairie Pipe Line Co. are at Independence, Kans. It is a subsidiary of the Prairie Oil & Gas Co., which is one of the Standard Oil family.

At Ranger the pipe line running to Galveston will connect with the pipe line that leads to Cushing, Okla., thence across more than one-half of the continent to Bayonne, N. J.

Greatly Expanding Fort Crockett.

Galveston, Tex., November 2.—[Special.]—Contract for the construction of 100 new buildings at Fort Crockett, which will provide accommodations for 2400 additional men, has been awarded to the firm of Horton & Horton of Houston. The buildings will cost approximately \$1,000,000, it is stated. They will consist of 20 units of five buildings each. Each unit will consist of two barracks, a mess hall, kitchen and storehouse. The erection of a 200-bed hospital building has been authorized, but it is not embraced in the contract just awarded. The work of erecting the 100 buildings will begin as soon as the necessary materials can be assembled.

It is stated that when the additions are finished Fort Crockett will be the second largest coast artillery camp in the United States. The contract will soon be let for filling in the low ground of a part of the reservation upon which Fort Crockett is situated.

Largest Air Explosive Plant in World Starts Operation at Muscle Shoals, Ala.

[Special Correspondence Manufacturers Record.]

Sheffield, Ala., October 29.

The Government cyanamid-nitrates plant at Muscle Shoals, Alabama, known officially as United States Nitrate Plant No. 2, began operating at 4.30 P. M. on October 23. According to an announcement made today by the Air Nitrates Corporation, the switch delivering power to the plant was formally thrown in at that hour, and the process of converting air into military explosives was thereby put into motion. About 250,000 pounds of high explosive, worth about \$45,000,000, will be produced at the plant per annum.

First ground was broken February 16, 1918, or a little over eight months ago. Under ordinary conditions the construction would have required about three years. The work represents an outlay of approximately \$50,000,000. More than 22,000 men were employed in the handling and erecting of 30,000,000 feet of lumber, 250,000 barrels of cement, 140,000 tons of machinery and other materials, making up an aggregate of 700,000 tons of freight delivered to the site between January and October of this year.

The unique character of the plant developed many intricate problems, including the recruiting of industrial labor on a large scale, the building of a temporary village for the construction force and a permanent village with all modern conveniences, steam heat, electricity, sewers, stores, churches, schools, hospitals, etc., and the feeding of a great army of workmen three times a day.

The plant site covers an area of approximately three square miles. The plant proper is about a mile long and three-fourths of a mile wide. A steam turbine electric generating plant produces 80,000 horse-power. The balance of the power requirements will be taken from the Alabama Power Co. The limekilns, which burn over 1000 tons of limestone per day for use in the process, are the largest in the world, as are also the plants for making carbide and liquid air.

Owing to the vast amount of explosives called for by the military program, the Ordnance Department in 1917 faced a serious problem because of the lack of nitrates in this country, which form the basis of all military explosives. The shortage of ships prevented the movement of adequate quantities of nitrates from South America, and even if the nitrate could have been obtained, the country's capacity of sulphuric acid for converting the nitrate to nitric acid and the base for the fixing of nitric acid were wholly inadequate. The only alternative was to utilize the nitrogen of the air as a source of both ammonia and nitric acid, used in making high explosives. There was only one organization on this continent with practical experience in the art of fixing air nitrogen, namely, the American Cyanamid Co., with plants at Niagara Falls and Warners, N. J., the former in operation since 1909, the latter since 1916. On the request of the Ordnance Department this organization formed a subsidiary company known as Air Nitrates Corporation to act as the agent of the United States for the construction of three air nitrates plants employing the cyanamid processes. The first and largest of these was located at Muscle Shoals. The other two are under construction at Cincinnati, O., and Toledo, O.

The process of making explosives from the air utilizes the greatest cold and the greatest heat in taking nitrogen from the air and fixing it in the form of cyanamid. This product is reduced in high pressure autoclaves, releasing its nitrogen in the form of ammonia gas, a part of which is oxidized by means of platinum screens to nitric acid, which, in turn, is absorbed in ammonia, forming ammonium nitrate, the safest yet most powerful of high explosives.

The contracting officer for the Government on this work was Col. J. W. Joyes, Chief of Nitrate Division, Ordnance Department, U. S. A., who, with his staff, closely followed and approved the work as it progressed.

The demand for speed, along with the great magnitude of the undertaking, called for sacrifices on the part of all connected with it. The American Cyanamid Co. severed all commercial relations in order to supply its entire production of ammonia to the Government. Its principal officials have formed the nucleus of the Air

Nitrates Corporation and its plants have served as training schools for large forces of operators. All the patents, process rights and plans of the American Cyanamid Co. were made available to the Air Nitrates Corporation. Under the contract with the Government, Air Nitrates Corporation receives a single fee for the designs and construction of all plants it may build for the Government. As an operating fee it will receive a small fraction of a cent per pound of product accepted.

It is estimated that the cost of production of the finished explosive will be about one-half the present market price of this commodity and one-fourth to one-fifth the cost of other high explosives. Aside from any other considerations, the savings in cost of production to the Government over the older methods of manufacturing should equal in one year the entire cost of the plant. After the war the plant may be used, if desired, for the manufacture of high-grade fertilizers at low cost.

HAMPTON ROADS IN WAR TIMES.

Great Future for Region Expected—But Public Utilities Must Be Developed.

Judge Christopher B. Garnett, chairman of the Virginia State Corporation Commission, on retiring from that position recently to enter the military service, prepared a statement, which was published in the Richmond Virginian, concerning the economic development of the State and the relation of public utilities thereto. Especially did he point out the development of the regions around Hampton Roads and the York River and the necessity for enlarged public service in the way of electricity, gas and water in those localities, and continuing, he said:

"The whole problem of the development of this region is wrapped up with and connected with the jurisdiction and personnel of the State Corporation Commission and with the ownership and development of the water-power sites at Roanoke Rapids, Petersburg, Richmond and Fredericksburg, and the ownership, control and regulation of plants furnishing gas and water to the various cities in Tidewater Virginia.

"If the Government will extend the transportation facilities for Tidewater Virginia to meet the demands and opportunities of that section and if the plants furnishing commodities of energy can be enlarged so as to produce cheap power, there is no reason why, within a few years, there should not spring up at the mouth of the James and York rivers industrial plants that will soon equal the tremendous industrial activities on the Delaware River.

"Two years ago the various cities and towns in this district were served by public utilities under the regulation and control of the State Corporation Commission in some cases, and in other cases governed by old-time franchises, and in one or two cases municipally owned and operated. Practically the supervision of these utilities by the commission was not effective as to the quality of the service, the maintenance of equipment, and particularly as to the adequacy of provisions made for meeting future growth.

"Antagonistic local interests in some cases and diversified ownership or control presented a situation in which there was no unity of direction or planning for the future. Attempts of the local authorities of one community to obtain improvements or more advantageous rates and service for their own limited areas were hampered by the fact that their service was intimately associated with and dependent upon facilities jointly used by the other nearby communities. Proper analysis of such situations was almost impossible without joint action and without the exercise of the authority of some body empowered and with the facilities to investigate the situation as a whole."

After remarking upon the large expenditures already made by the United States Government around Hampton Roads for furthering our military operations, not to say anything about the lately determined expenditure of large sums for the improvement of certain public utilities there to meet the needs of our war forces, the statement resumes thus:

"There is no question but what this portion of Virginia is in the way to benefit more by the war activities of the Government than any other section of the United States, but this benefit will be seriously retarded if the citizens, both of the Hampton Roads district and of the whole State of Virginia, do not energetically operate to assist the Government and to assist the public utilities in this section to fulfill their requirements."

"If the State Corporation Commission had been clothed with greater authority and supported by a large appropriation it is entirely probable that some of the hindrances to the successful prosecution of the development of some of these utilities would not have been present. The State Corporation Commission could then have organized a competent and experienced staff to guide the public utilities, and they would have been required to keep their plants and equipment at a high state of efficiency with adequate reserve capacity. A system of rates sufficient to provide for good service and a fair profit to the investors in such utilities would have been inaugurated and maintained."

In conclusion, Judge Garnett suggested public consideration as to whether the State Corporation Commission should not be given more authority over public utilities, with greater facilities, so as to direct toward adequate advancement the properties themselves, and also to give proper service to the public.

Germany The World's Blackest Criminal

Believing that Secretary Lansing's address and the other special articles printed in our issue of July 4th gave an official and comprehensive resume of the whole origin and meaning of this war, we have anticipated the demand for them by putting them in the permanent and convenient form of a 28 page booklet.

These articles and letters are by the following leading men of our country:

HON. MYRON T. HERRICK,
Former Ambassador to France.

CHARLES M. SCHWAB.

REV. ROBERT STUART MAC
ARTHUR, D. D.,
President of the Baptist World Alliance.

HENRY A. WISE WOOD,
Chairman, Conference Committee on
National Preparedness.

HON. ROBERT LANSING,
Secretary of State.

Also an Editorial which attracted
wide attention throughout the
Country written by

RICHARD H. EDMONDS,
"The Only Peace Terms We Should Ever
Consider."

15 cents per copy; in quantities of 100 or more 10 cents
per copy, when shipped in bulk.

Published by
MANUFACTURERS RECORD
BALTIMORE, MD.

Great Achievements of Older Men

A STRONG PLEA FOR MEN OF ADVANCED AGE IN PUBLIC AND PRIVATE WORK.

Pascagoula, Miss., October 31.

Editor *Manufacturers Record*:

Your recent editorial, "Older Men Should Not Be Excluded from Government Employment," is most timely and pertinent, and I am glad to see that the *MANUFACTURERS RECORD* has handled the subject in its usual vigorous and logical method. The subject is one that has occupied my mind for many years, and while I do not know of a single sound argument that can be advanced against the position of the *MANUFACTURERS RECORD*, there are many that can be adduced in support of it.

Some 25 years ago we had an outburst of what can only be properly called journalistic hysteria over the fitness of youth for great employment, the decadence that comes upon men when they have passed the heyday of youth. In those days the press was filled with accounts of "great captains of industry, Napoleons of finance," who had scarcely passed their teens, and this was repeated ad nauseam until the "funny man" and paragraphers began to make it the butt of his ridicule.

Dr. Osler said that a man at 40 should be shot, as he was no longer fit for anything, and though Dr. Osler in a public interview stated that the remark was made in jest, a host of blockheads euphemistically known as "great editors" and "famous journalists" seized upon the famous surgeon's words as an excuse for a scare heading and exploited the phrase until it became an accepted truth, and that in spite of the evidence of psychology, history and physiology.

The editor of the *MANUFACTURERS RECORD* is right when he says that "many men do not attain their full power for mental work until they are 50, and some are in the fullest vigor of mental strength long after they are 60." There is an abundance of evidence at hand to maintain the soundness of this statement. Blake was a retired country gentleman until he had passed the age of 45, when he entered the English navy and at 54 he was put in command of the British fleet and at first was defeated by Van Tromp, the famous Dutch admiral, but afterwards gained the victory over him. Dandolo was elected Doge of Venice at 84, and at 94, blind with age, he led a storming party that stormed the city of Constantinople and was elected to the throne of the Eastern Empire, which he declined, dying at the age of 97. Washington had passed the middle age when he began his great work of establishing American freedom, and is today recognized as one of the world's great captains. Dadesky was 83 when he won his great victory of Novara, and did not retire from active life until he was 90. Lord Clyde was 62 when he was appointed to command the Highland brigade in the Crimea, and was 65 when he delivered Lucknow. De la Motte did not begin to write novels until he was 50, and wrote the first part of Robinson Crusoe when he was 58. Cicero wrote his treatise on old age at the age of 70, and was assassinated one year later. Newton wrote the preface to his great work *The Principia* at 70, and Humboldt put the finishing touches to his *Discourse* at the age of 90. Chief Baron Pollock, the great chief justice of the English Court of Exchequer, retired at the age of 83 and took up the study of photography (then a new science), and became the president of the Photographic Society. John Marshall, Chief Justice of the United States, died in harness at 80, and I, who have read and studied all of his decisions, unhesitatingly state that his late decisions show no falling off, but rather an increase of mental vigor.

A whole page or more of the *MANUFACTURERS RECORD* might be taken up in citing examples to prove that it does not necessarily follow because a man is 45 or 50 his mental and physical powers are on the wane, and any hard and fast rule on this point is calculated to work great injustice to many deserving men. The testimony of history shows, as Dr. Lordat, an eminent physiologist of Montpellier says: "It is not true that the intellect becomes weaker after the vital force has passed the culminating point. The understanding acquires more strength during the first half of the period designated as old age. It is therefore impossible to

assign any period of existence at which the reasoning powers suffer deterioration." Good wine grows richer and better with age and poor wine sours and turns to vinegar.

If a hard and fast rule were adopted in all countries excluding men from public employment who have passed the age of 55, President Wilson, General Pershing, Clemenceau, Joffre, Foch, Petain, Haig, Byng, Diaz, and a whole host of others upon whom civilization now leans for its safety, would have to be retired. I once presided over the examination of a young white man, age 23, who was suffering from "premature senility;" in other words, he was an old man at the age of 23, and today in Clemenceau, Foch and others we have young men who, according to a certain class of theorists, were mentally and physically unfit for service more than 20 years ago.

Men who have spent many years in a calling are, as a rule, better fitted to the work that they are accustomed to in advanced years than when they were young, and this is especially true of mental labor. Years ago, when I first began the work of my present office, it was a great labor for me to write out a legal document of any kind, but years of constant practice have so accustomed me to it that when I now begin such a task it is purely mechanical, requiring no thought. What is true of my line of work is also true of every accountant, printer or other work that is not solely physical.

At the breaking off of diplomatic relations with Germany I offered my service to the Government to serve in any capacity, but was politely told I had passed the age limit. When I met men in the service who were older than myself I asked how they were in service, and the answer was that they had entered the service before passing the age limit. Now, to be logical, if a man that has passed the age of 45 or 55 is on account of his age incapacitated from taking service under the Government, then those of the same age are likewise incapacitated from remaining in the service. Do not understand me to be advocating such unnecessary cruelty; on the contrary, I am opposed to such a step. I only mentioned it to call attention to the absurdity of the position of one who would fix a hard and fast rule of limiting the right of entering public employment to any age, 45 to 60.

A great deal of this agitation against age has come from those who were impatient to climb higher and could not wait the course of nature in removing those who were older from their path. This feeling has been nourished by a false philosophy that has ruled this nation for many decades, and which was propagated by newspapers and men who were the educators of youth, and that was the young man who had not attained success in life by the time he reached the age of 30 was a failure. This begot a feverish impatience and haste that has not been well for the nation, and if this war will bring more soberness and make for a repression of some of the nervousness and hysteria that have been so noticeable in our national life, it will prove a blessing in disguise.

CHAS. E. CHIDSEY.

Memphis, Its Progress and Advantages.

A booklet entitled "Memphis: Advantages, Resources and Opportunities It Offers Manufacturers and Distributors," has just been issued by the Chamber of Commerce, Memphis, Tenn. It is from the pen of Geo. W. Fooshe, who in four chapters handles his subject with directness and skill under the respective headings, "Location and Its Significance," "Memphis as a City in Which to Live," "Memphis as a Manufacturing Center," and "As a Distributing Center." There are two inserts, one of which is a diagram showing in hours the time it takes to reach Memphis from a large number of the leading cities of the country; the other is a map. The foreword directs attention to the wonderful progress of the city in all lines and also to its advantages as to location, transportation, raw material, labor, fuel, etc. Particular attention is given to its situation with respect to war industries.

The booklet is handsomely printed on heavy paper. H. R. Cheers is chairman of the publicity division of the Chamber of Commerce, which has issued it, and W. H. Hayley is acting secretary of that organization.

Influenza Epidemic Cut Coal Output.

In its weekly summary of coal production, the Geological Survey reports that the influenza epidemic continued to limit production of bituminous coal during the week of October 26, and preliminary estimates place the output at 2.7 per cent. below the week preceding. The output during the current week (including lignite and coal coked) is estimated at 11,215,000 net tons, as compared with 11,524,000 net tons during the week of October 19 and 10,804,000 net tons during the corresponding week of 1917.

The decline in production during the past few weeks now makes necessary an average daily production during the balance of the coal year of 2,047,000 net tons, an increase over the daily requirements of approximately 1.6 per cent., and over the average daily production for the coal year to date (1,988,000 net tons) of 3 per cent.

Production of anthracite during the week ended October 26, estimated at 1,714,000 net tons, is exactly the same tonnage as produced during the week preceding, but fell below the corresponding week of 1917 by 339,000 net tons, or 17 per cent. For the period April 1 to date, the total production is estimated at 59,087,000 net tons, as compared with 58,789,000 net tons during 1917, or an increase of 0.5 per cent.

Carriers' reports show a decrease in shipments from all districts during the past week with the exception of the district including Cumberland, Piedmont and Somerset, Northeast Kentucky, and the smokeless fields of West Virginia, Southwest Virginia and the district including Iowa, Texas and the Southwest States. Western Pennsylvania, Ohio and the district including Illinois, Indiana and Western Kentucky fell behind the most, while the improvement in the various districts mentioned was slight.

Bituminous coal dumped at lake ports during the week ended October 26 is estimated at 1,036,590 net tons, a decrease compared with the week preceding of 8 per cent., and 5 per cent. compared with the weekly average from July 1 to date. Total bituminous coal dumped at lake ports from April 1 to date now amounts to 26,100,000 net tons.

Shipments of bituminous coal from all tidewater harbors during the week ended Saturday morning, October 26, are estimated at 819,359 net tons, approximately 10 per cent. of shipments during the preceding week. All harbors reported improvement for the week with the exception of Baltimore, from which harbor shipments decreased 6.8 per cent. compared with the week preceding. Shipments from New York and Philadelphia increased 10 per cent., and from Hampton Roads 13.3 per cent. For the coal year to date shipments now amount to 26,812,394 net tons.

Production of beehive coke in the United States during the week ended October 26 is estimated at 592,000 net tons, an increase compared with the preceding week of 3 per cent., but a decrease of 2 per cent. compared with the corresponding week of 1917.

The operators in the Connellsville, Greensburg and Latrobe districts of Pennsylvania report production during the week ended October 26 at 353,287 net tons, and the full-time operation of their plants at 73.9 per cent, as compared with 75.1 per cent. during the week preceding. Shortage of coke cars caused a loss of full time of 3.8 per cent. and labor shortage of 19.2 per cent.

The same operators produced 225,850 net tons of coal.

During the past few weeks operating conditions in the by-product industry varied but little, the operators of the country reporting full-time operation of their plants at approximately 90 per cent., the limiting factor being reported as necessary repairs to plants.

The operators of the country reporting for the week ended October 26 show production of 577,808 net tons, approximately the same tonnage as produced during the week preceding. Their plants were operated at 90.7 per cent. of their full time, and out of a total loss of 9.3 per cent., 6.4 per cent. is attributed to repairs to plants, a slight increase over the preceding week.

Improvement in operating conditions occurred during the week in Kentucky, Massachusetts and New Jersey. In the former two States it was due to repaired plants, and in the latter State to better supply of coal. A decline in production is reported by the operators in Illinois, New York and Pennsylvania, brought about by repairs to plants.

Increase in capacity in Pennsylvania during the week is due to the completion of new ovens by the Carnegie Steel Co. at Clairton, Pa.

Double-Tracking the Southern Railway

By E. C. FERRIDAY.

Several years ago it was decided by those to whom the affairs of the Southern Railway are entrusted that the double-tracking of the main line between Washington, D. C., and Atlanta, Ga., was a necessity, not only on account of the tremendous traffic which was originating and being diverted to it by its connections, but in order to meet the demand of the north and south traffic as a result of the opening of the Panama Canal. All the principal north and south lines, such as the Louisville and Nashville, Cincinnati Southern and others, saw the necessity for double-tracking stretches of their main line, and the Southern Railway, because of its geographical position, the main artery between the North Atlantic Seaboard and the Gulf States, realizing the volume of traffic which would be passed over their lines, felt that the double-tracking of the main line was an absolute necessity.

While the Southern Railway had a great deal of double track on its main line, there were stretches in Virginia and the Carolinas and Georgia where trains were operating over single track with much curvature and heavy grade, so in the late spring of 1914, under the direction of Major W. H. Wells, Chief Engineer, Washington, D. C., the company embarked on a program of completing the double-tracking of the entire line between Washington and Atlanta. This is now about finished, and from most of it the company is deriving benefit not only in increased traffic, but in increased earning capacity.

In this vast amount of work the 60-mile revision between Central, S. C., and Cornelia, Ga., is the last link, and will be completed when the section between Toccoa, Ga., and Ayersville, Ga., is finished.

This latter section of work was awarded C. W. Lane & Co., Atlanta, Ga., who have for years done work on the Southern Railway, Louisville and Nashville, Seaboard Air Line, Virginia Railway and other large systems, to say nothing of individual enterprises for private corporations which they have executed from time to time, which work has been directly under the charge of C. W. Lane, with L. C. Harris superintendent and right-hand man.

This section is the heaviest piece of work ever undertaken by the Southern Railway Company. It reduces the mileage from 7.6 to 6.0 miles. The maximum curve on the old line is 9 degrees, and the maximum grade is 1.3 per cent., while on the new line the maximum grade is 1.00 per cent. and the maximum curve is 3 per cent.

The original estimate for the section—Toccoa to Ayersville—called for 1,400,000 cubic yards of classified excavation and two steel viaducts, one at North Broad River, 1600 feet long and 210 feet high, and one at Coldazell Creek, 2800 feet long and 160 feet high. These were to be deck-plate girders resting on steel towers, but on account of the cost of structural steel and the uncertainty of delivery, plans were changed so as to require as little steel as possible.

It was then decided to fill over Coldazell Creek because a large amount of material could be obtained near the site. This fill required about 1,800,000 cubic yards. Two Osgood No. 73 steam shovels with 3½-yard dippers, and standard gauge 60-ton locomotives handling from 7 to 10 car trains of 12-yard Western air dump cars were used in its construction. The fill was made in 40-foot lifts.

At the south end of the fill the new line crosses the old line at an elevation of 72 feet above the old track. A temporary change was made here for about half a mile to reduce the difference in elevation in the two lines. This was done by using a 2 per cent. grade and making the summit at the crossing. The new track will have to be put into operation before the old track is abandoned. This will be done by spanning the old line with 60-foot girders on pile piers. When the old track is removed this gap will be filled. This change was made to reduce the quantity of filling after the new track is in operation, and to shorten the time the temporary bridge will be used.

At the North Broad River it was decided to build hollow concrete piers with 100-foot steel deckplate girder

spans between piers, and a 26-foot steel girder spanning the top of the piers. This change in plans called for about 45,000 cubic yards of concrete. There are eight hollow piers about 200 feet high. These are 30 by 34 feet at the top, with ½-inch batter on the sides. The hollow inside is circular. The forms used are sectional and built of wood. These were designed by C. W. Lane of C. W. Lane & Co., Inc., Atlanta, Ga., and J. J. Gantt, Assistant Engineer of the Southern Railway. They are made interchangeable to reduce delays to a minimum. A cableway is used to handle the forms.

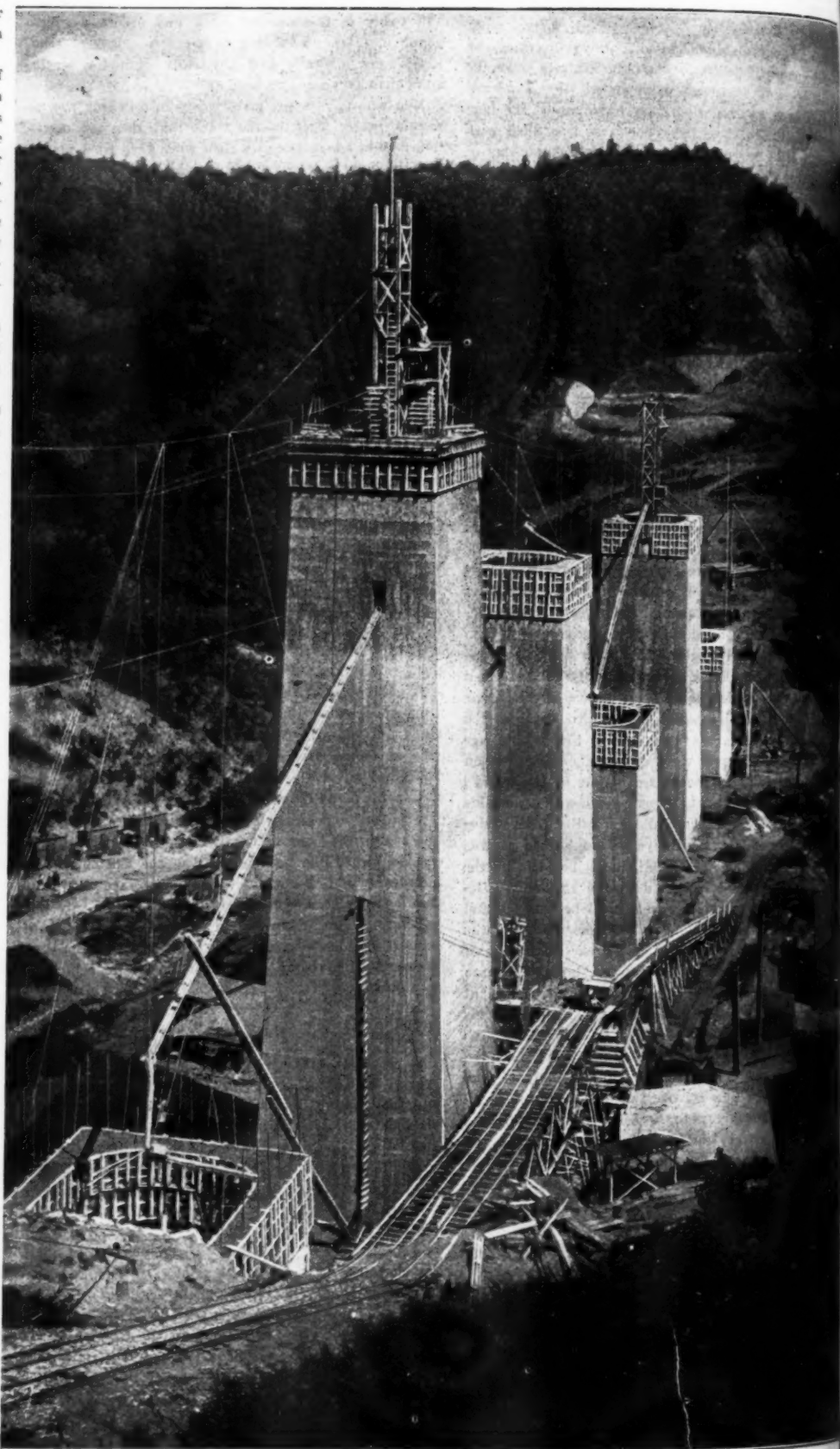
The concrete is all placed by towers and chutes.

The sand used in this work is obtained from Tugaloo River, nine miles away, at which place C. W. Lane & Co. have a sand dredge. The stone is obtained from a quarry about half a mile south of the bridge site.

One mile south of Ayersville, Ga., is the last cut on the section. This cut contained about 300,000 cubic yards, most of which was unusually hard rock, and would have been found to be very difficult to remove but for the use of the very high-grade explosives.

At one end of this cut the present main track crosses. In the middle of the cut was extremely hard rock, while at the other end water and mud was encountered. The job requires the handling of 1,400,000 cubic yards classified excavation, 1,800,000 cubic yards borrow for Coldazell fill, 50,000 cubic yards concrete. The average cost per mile is \$250,000.

The contractors used seven steam shovels, a large number of teams and three concrete mixing plants.



NORTH BROAD RIVER VIADUCT, TOCCOA, GA.

Data for this article was furnished by B. L. Crenshaw, Assistant Engineer Southern Railway, Knoxville, Tenn. Photographs were furnished by W. G. Hamner, Lynchburg, Va., Official Photographer of the Southern Railway.

In connection
and two rock
The contrac
one of it bei
The work v
tion of B. O
Railway, Toc
tion of B. I
Southern Rail
work is compl
tion of h
contracts on
at New Glasg
which include
depth 100 fee
solid and very
use a large q
grade relat
50 per cent.
referred to bet
gives the cont
ing successfully
cut on the
the highest an
feet. The com

November 7, 1918.]

In connection with the work one sand-dredging plant and two rock quarries are also in use. The contractors have done all the work themselves, none of it being sublet. The work was prosecuted under the general direction of R. O. Parsons, District Engineer Southern Railway, Toccoa, Ga., but under the direct supervision of B. L. Crenshaw, Assistant Engineer for the Southern Railway from Knoxville, Tenn. When this work is completed the contractors will have the distinction of having executed two of the most difficult contracts on the Southern Railway system. One is at New Glasgow, Va., covering a section of nine miles, which included a rock cut one mile long, maximum depth 100 feet, in which was found practically all solid and very hard rock, where it was necessary to use a large quantity of Du Pont Company's highest grade gelatin dynamite, some of it being as high as 90 per cent. The other contract is the one above referred to between Toccoa and Ayersville, Ga., which gives the contractors the further distinction of having successfully excavated the largest and most difficult cut on the Southern Railway, and of having made the highest and largest fill of such great depth, 169 feet. The concrete work for the viaduct, 1400 feet

long and 200 feet high, which is built with hollow concrete piers, gives the engineers of the Southern Railway Company the credit for having worked out the first hollow pier construction to be used for such a high bridge.

Handbook of Latin-America Trade.

"Trading With Latin-America" is the appropriate title of a new book issued by the Irving National Bank of New York and covering the course of such international business from the obtaining of orders through the filling of orders and their shipment to payment thereof. It is from the pen of Ernest B. Filsinger, who considers the subject in full detail, supplementing the text with sample invoices, bills of lading, drafts, etc., so that there may be no lack of understanding on the part of readers as to how export trade is conducted. There are 168 pages, exclusive of the index, and the whole is well printed on excellent paper in clear type, the binding being of blue fabric, with gilt lettering. It is presented by the bank to those who are already engaged in Latin-American commerce, to those who propose to engage in such business, and to those having a friendly interest in it.

A Rhine Bombing Raid.

London, October 28—[Special.]—Not only are the Allied airmen harassing the German front and support trenches, in their daily flights over the Hun line, but large bombing squadrons are doing such efficient work in bombing the inland towns of Germany that merchants at Frankfurt-on-the-Main, Cologne, and other big Rhine towns are becoming more and more scared every day.

American bombing squadrons are now taking part in the game and the Yankee pilots and observers, like their British brethren of the Royal Air Force, enter into this "fight" with the same spirit that has made them famous on the baseball diamond or football gridiron of their own American colleges.

A young American aviator has just told of a trip over the German lines and back behind into German territory. The formation in which the American airmen flew consisted of eleven big bombing machines, each of which carried 1600 pounds of high explosives, three machine guns and three men.

This was the boy's story:

"After I had tried the guns on my machine, checked the bombs, made sure everything was shipshape, and put a couple of little bombs into a small bag beside me, I started my engine. The big motors growled away, waiting for the starting flash. Soon the signal came and we were off.

"For 20 minutes we climbed until the earth was just a dark blot. Another 25 minutes and we were over the trenches, with the searches groping about in the mists below us. The big guns crashed away continuously, and we could see their explosions from where we soared high above them. No sooner had we crossed the lines than the Germans started firing at us with their anti-aircraft guns. Once a German searchlight got right on us with its beam of light. We fired a couple of rounds of machine gun fire at the Germans who were manning the searchlight, and it went out.

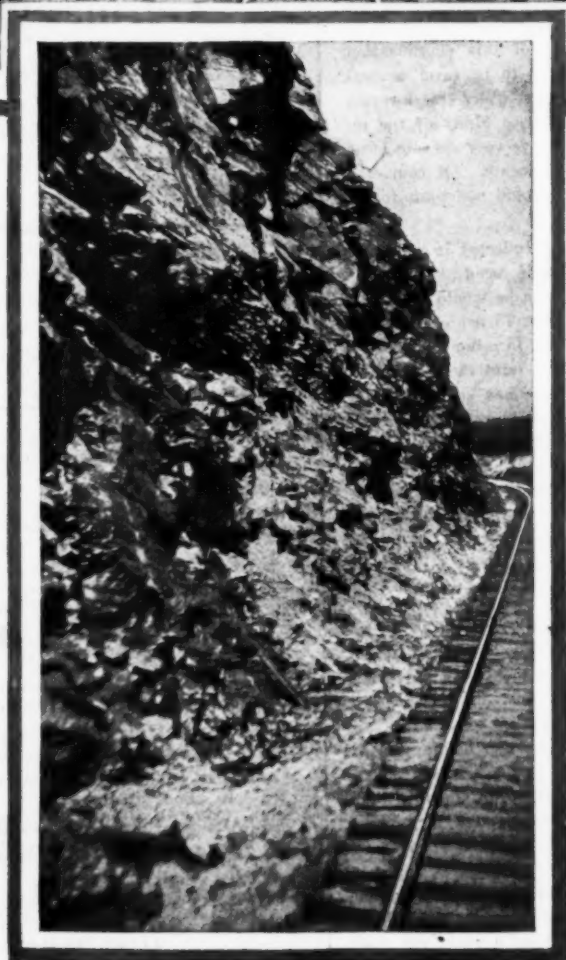
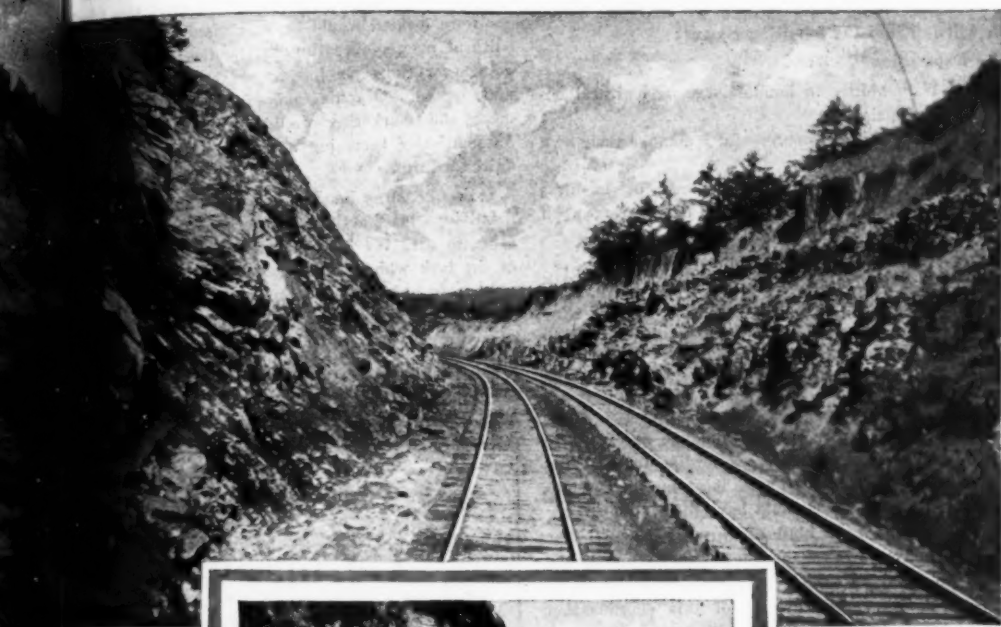
"Far below us we could see the lights of a locomotive. Finally we reached our objective. According to plan, we throttled our motors and glided towards the earth to get nearer our targets. It was curiously quiet. Then suddenly, the earth seemed to open below us. Seventeen searchlights were turned on by the Germans and their shafts of light swept all about us. The anti-aircraft guns made a wall ahead of us. The high explosive shells burst on every side of us, and the green fire balls swayed and spiraled as they tried to set us on fire. The American machines went straight on with never a waver or a turn. There were so many crashes that I thought more than once that we were hit. We kept straight on.

"Suddenly one of the German searchlights got us, and the rest of the 17 threw around on us with a suddenness that made their concentration feel like a blow. We fired our machine guns until the tips of the weapons got red and the glow began to creep up the barrels. The whole 17 beams were on us, although we plunged and sideslipped about in a desperate way. We let go the bombs when we were right over the mark. The anti-aircraft shells were getting even closer than ever and the machine was hit time and again, though not in a vital spot. Why we were not literally blown out of the air, I do not know. After we were well over the mark and had dropped all our bombs we discovered one 250-pound bomb which had caught fast in the rack and failed to drop when released. Consequently we swung back on a second run and when we were over the place which we had bombed we let go the last bomb and scored a direct hit far below.

"We went home at a high speed. We crossed our own trench lines at about 3000 feet up, saw some familiar landmarks, headed for our own aerodrome, fired our signals and got the answer. A few minutes later we had landed. A glance over the machine saw two big tears in the side of the fuselage and many holes in the wings.

"But we had done a splendid bit of bombing, and such damage as our machine had suffered was by no means difficult to repair."

Bread made from wood is being used in Sweden, a Swedish chemist having devised a method by which spruce wood flour can be produced. Bread baked out of two-thirds wheat or other flour and one-third spruce flour is said to be a healthy, well-tasting and digestible food.



FINISHED RAILROAD CUT, AYERSVILLE, GA.

SIDE VIEW OF FINISHED CUT, AYERSVILLE, GA. CAMP 3.

Farms for Returned Soldiers

By STANLEY F. MORSE, New Orleans, La.

In view of the way our agricultural resources have been squandered in the past, it is a pleasure to read Secretary of the Interior Lane's suggestions as to providing farms for returning soldiers after the war. While Secretary Lane and a few others may have an adequate conception of the practical problems involved in making a successful farmer out of the average soldier who has had no farming experience, there are many persons, particularly those with lands for sale, who have only the most vague and highly impractical notions regarding this important problem.

Looking at this proposition from a practical standpoint, it resolves itself into the following questions:

First—What land is available for agricultural (crop production and livestock raising) purposes?

Second—For what kinds of agricultural enterprises are the various kinds of land in the different climatic regions best adapted?

Third—Cannot certain of the land areas be developed more cheaply and more profitably than the others, and should not such areas be developed first?

Fourth—Is it not a fact that large farm units can be operated more cheaply and profitably than small units in certain types of farming? And is it not true that the proper size of the farm, the type of farming and its degree of success are interdependent?

Fifth—Does the average soldier know enough about farming to make it wise to put him on a farm of his own from the start?

Sixth—What percentage of soldiers who are already practical farmers or who may become proficient in the technique of farm work possess the natural ability, initiative and business sense to make a success as independent farm owners and operators?

Seventh—How shall this scheme be financed?

A matter of such fundamental economic importance as the development of the agricultural lands of the nation should not be left in the hands of theorists or selfish land exploiters. Secretary Lane's suggestion of Government control is the logical one, but it must be a different sort of control from what we have had in the past. The men entrusted with the management of this great enterprise should be the best obtainable. To limit this work to those qualified by the civil service and hampered by governmental red tape and bureaucracy would certainly stunt the development of this project. Congress should appropriate sufficient funds so that a complete, careful survey may be made and detailed plans prepared. This work should be done under the supervision of a special commission composed of an agricultural engineer, a farm-management expert, an agricultural economist, a big, practical banker-farmer, and a successful farmer who is operating on a large scale. Politics should be absolutely barred from this agricultural development commission. Unless the investigational work is to be properly done, there would be no sense in making an appropriation for this purpose.

Taking up the several problems that this proposition involves, the following points must be kept in mind:

Naturally, the first step would be to make a thorough, systematic survey of the available unused lands. All land suitable for farming or grazing purposes should be classified as to its adaptability to some kind of agricultural development. Agricultural enterprises are usually extensive or intensive, and may be operated on a large, moderate or small scale, according to local conditions. The question of how big a farm, ranch or plantation should be depends entirely on the type of farming which will probably be most profitable. Wheat, sugar, cotton, rice, cattle and other staple products are generally produced most cheaply on large farms managed somewhat the same way as are big manufacturing plants. The public demands agricultural products that are raised at as low a price as possible, hence it would be folly to cut up great tracts of uniform good land into small farms when they would produce more cheaply as large single units. On the other hand, there are certain types of farming, like trucking, fruit growing, poultry raising and market gardening which are usually most successful when conducted on a small, intensive scale. But diversified or mixed farming is sort of midway between the two, and is adapted to conditions which are not always favorable to either large or small-scale farming.

In order to determine what is to be done with a body

of land, it is not enough to simply make a soil survey with chemical analyses and a topographic map. Besides, there must be studied the influencing factors of climate, water supply, healthfulness, transportation, labor, natural hazards (such as flood damage, earthquakes, storms and pests), markets and community development, and the relationship of these factors to the successful outcome of any particular type of farming must be determined as accurately as possible. Then detailed plans would have to be worked out for the development of each project. Since the profitable development of any tract of land depends entirely on choosing a type of farming which is adapted to it and in preparing practicable development plans, and since it would be a terrible economic mistake to permit returned soldiers (or anyone else) to waste their time and money on a hopeless enterprise, it is evident that too much theory, inexperience or politics in handling this great scheme would result only in a colossal fiasco.

This, however, is not the only pitfall. The returning soldier himself would have to be studied. These men will fall into the following classes:

A—Experienced farmers.

- (1) With ability to handle large agricultural enterprises.
- (2) With ability to successfully manage their own farms.
- (3) Lacking the initiative, energy or business ability to operate their own farms at a profit.

B—Men with little or no farming experience:

- (1) With executive or business ability for managing big enterprises.
- (2) Having the ability of becoming successful farm operators.
- (3) Without the requisite executive or business ability.

In Class A a further listing would be necessary to classify the experienced farmers according to the types of farming with which they were most familiar. Similarly, a systematic effort would have to be made to try to determine in what kind of farming each soldier would have the best chance for success; also, the amount of available capital he possessed would be an important factor. As a result of this classification there would be found men fitted to be farm general managers, superintendents, owners, overseers, foremen of departments and skilled laborers. Many of the returned soldiers would doubtless have very definite ideas as to where they would like to locate. Of course, a large percentage of the soldiers would not want to engage in farming.

After all these data had been collected it would be possible to make some intelligent headway towards placing the man on the land where he would be apt to thrive best. But probably at least 75 per cent. of the ex-soldiers would be lacking in farming experience. What of their ability to go right onto the farms and make them pay? Secretary Lane has suggested that some of the men could be employed in construction and reclamation work at the beginning. Nevertheless, this would not fit them to be successful farmers. One of the biggest problems, then, would be the training of the multitude of inexperienced men who wished to take up farming.

Two methods of training would be farmers suggest themselves as being practicable:

1. Intensive farm training camps with courses lasting three to six months.
2. Systematically placing these men as employees on large corporation-owned plantations, or on smaller farms where they would gain practical experience.

Probably the best plan would be the combination of methods 1 and 2. The agricultural training camp would most logically be located near and supervised by the various State agricultural colleges. A very practical, intensive course of instruction would be given to train the men in the fundamental principles, as well as the art of agriculture. Most of the men would have to be taught the A B C of farming, such as hitching up a horse, milking a cow, handling a plow, etc., but they would also learn why certain things were done, and would thus become intelligent farm workers. At the completion of this course some might wish to enter

the regular agricultural course, while more would want to get into actual farming.

However, these "short-course graduates" would not be practical farmers yet, by any means. They would have had no experience with varying weather, pests and other puzzling conditions, and would not be familiar with the fine points of management and business procedure. Therefore, the next step in their training would be to give them actual experience as farm workers for periods varying from one to five years. Through the co-operation of farm owners the returned soldiers would be given employment on well-managed farms, plantations or ranches corresponding to the type of farming in which they expected to engage. Gradually these men would acquire practical farming experience until they were to shift for themselves as owners, executives and skilled employees.

When a returned soldier was offered a farm of his own, this farm would not only be suited to his qualifications and personal tastes, but detailed plans for its development (including layout, buildings, cropping, fertilizing system, livestock, implements, management and financing) would be given him. A special department of the Federal Farm Loan Bank would develop and have to be developed to help finance these soldiers' farms. In addition, the regions in which these soldiers were located would be supervised by Federal agricultural agents operating in counties or districts, doing everything possible to assist the new farmers to make good. Organizations for community development and marketing would be formed, each soldier automatically becoming a member as soon as he required a farm.

It is of course impossible to go into this subject in detail in a brief article, but perhaps the foregoing will serve to give the layman some idea of the magnitude of the task which would be involved by attempting to place returned soldiers on farms. If this job is not tackled, nothing should be left undone to make the economic success; otherwise the Government should not undertake it at all. The time to work out the details of this gigantic scheme is now.

A 16-Page Pamphlet

Germany— The Super-Fiend

A Nation Gone Mad in Its
Lust for Power and World
Dominion.

A discussion of the Fallacious
Doctrine that "Might Makes
Right" and "As the State Can
Do No Wrong, if the State
Orders Crimes Committed, It
Ceases to Be Crime."

"The German Nation's Brutality a
Natural Product of German 'Kultur.'"

"The Degradation of Childhood and
Womanhood by Germany."
By Dr. Anna Howard Shaw.

"Confirmation of Thyssen's Damning
Revelations of Germany's War of
Murder for World Conquest."
Including views of Otto H. Kahn, of Kuba,
Loeb & Co., and the revelations of Dr.
Muehlen, former director of Krupp.

"Trying to Repeat in America the
Ruin Wrought in Russia."

"We Must Fight the Blood Lust of
the German Tiger Unto His Death."

"Time to Think Straight as Well as
to Shoot Straight."

"A Slander on The Yellow Dog."

"The Fighting Eagle of America."

Published by

Manufacturers Record, Baltimore, Md.

5 CENTS PER COPY

25 OR MORE AT 4 CENTS PER COPY

500 OR MORE AT 3 CENTS PER COPY

When Germany Seeks to Invade American Markets, What Will Your Answer Be?

[Mr. Roy F. Soule, in a recent issue of *Hardware Age*, brought home with intense vividness the fact that the Germany from which we formerly bought so freely is the Germany which has been producing the things for the killing of our beloved soldiers and Red Cross nurses. He has pointed out with exceeding clearness some of the beastly horrors of Germany's army, and he has asked of American buyers what their answer will be when the time comes and Germany seeks to trade in this country as to whether we shall buy the things produced in Germany or not.

But the question which he raises is a far broader one than merely of trade. It touches deep down into the soul of every one who reads his presentation of the case. We are glad to give our readers the opportunity of studying the question which will come directly home to every man and woman in America the moment the war is over and Germany seeks to invade our markets. — Editor *Manufacturers Record*.]

By ROY F. SOULE.

The Work of Kultur.

A few weeks ago the Llandovery Castle, a Red Cross hospital ship, was sunk by a German submarine. That great ship was fully equipped to care for wounded, suffering soldiers. Its only passengers were doctors and nurses. It was marked with a great red cross made of red electric lights. The sides of that ship were illuminated, showing for miles away the character of the vessel. There was no possible chance of mistaking the Llandovery Castle for anything but a hospital ship. And damn them, they deliberately torpedoed that ship and took American doctors from open lifeboats and abused them. The shock of this distinctly brutish act was a little softened by the fact that we have been pretty well trained to expect such atrocities from the Austrians and Germans, who have deliberately shot our doctors, outraged our nurses, bombed our hospitals and destroyed other hospital ships. It is Kultur spelled with a "K."

Before the war we imported from the Central Powers practically every surgical instrument used in America, not because we couldn't make them, but because the volume of such business was comparatively small and the Germans made a specialty of hand-made surgical tools. The other day in Washington I saw the set of surgical instruments adopted by the medical chief of our army. Practically every instrument could be readily made by any of our plier manufacturers and the orders are running into such quantities that they will be stamped out as are American-made pliers. In the days to come will those American surgeons who are seeing and caring for the thousands of victims of Hun atrocities ever permit themselves to forget sufficiently to purchase a surgical instrument made in Germany? Never! The memory of those doctors and nurses who lost their lives in the Llandovery Castle murder cry in protest even against the thought. The Germans may ship their instruments over here without identifying marks? Not if true Americans are in the purchasing department. Is Germany's surgical instrument business dead in America? Mr. Buyer, it's up to you.

Brutal and Beastly.

Say, loyal American, how would you have liked to have your wife in the town of Gembloux when it was captured by the Germans? Scores of innocent people were butchered there. The raping of women and young girls was common and continuous. One young woman was outraged by several soldiers, stripped naked and fastened to the door of her own home by a cutlass driven through her chest with sufficient force to hold the body to the heavy panels. Her breasts were brutally cut off, and with her head hanging, and her hair flying in the wind, the body of that poor young martyr stiffened in death. Horrible, yes, more hideous than the Indian massacres that caused our pioneers to shudder in the early days of the West. Brutal and beastly. You may well thank God that your loved ones were not in Gembloux.

Before the war we imported annually millions of dollars' worth of kitchen enameled ware from Germany and Austria. These utensils were used in the kitchens of American homes. There was probably some of the same ware in the kitchen back of that blood-stained door in Gembloux.

Before the war American manufacturers had made great strides in the manufacture of enameled wares. Their goods were favorably known in every State in the Union, yet in almost every American town there was a line of heavy-coated colored wares and of white

enameled wares that came from the Central Powers. The blockade against their shipping quickly broke these foreign-made stocks and the odds and ends were cleared up with special sales. Complete lines of enameled wares made in our factories have replaced them. Will German and Austrian enameled wares go on to our shelves again when the Kaiser and his Prussian war maniacs are whipped? Will we swallow the story that all the Germans were forced into these atrocities with absolute proof that the Bavarians worked single-handed and in apparent glee at many of these hellish outrages? It would seem that a good American would starve rather than foul his lips with food from a German utensil. That's the way it looks, but after all it's up to one single class of Americans, over whose doors are lettered the big word, BUYER.

Postal cards. We have used millions of them to say a brief hello to the folks at home when we are on the road. Postal card holiday greetings, postal birthday congratulations, postal cards that could be written quickly and mailed with ease when pleasure or business, magnet-like, speeded the use we made of our time. For the past three years postal cards have frequently told brief stories so direct in their wording that the full shock of their horror equaled or excelled those telegrams from the War Department which are bringing home to us the price we are paying for democracy.

Imagine a postal card telling that your son had lost his third finger, deliberately cut from his hand that a Hun might become possessed of the ring he wore.

Picture the postal that told you of the burning of the lunatic asylum at Obourg, Belgium, and of the frightful death of the 200 insane women who were being cared for in that institution.

Read the postal that might truthfully tell of that French woman 80 years of age who was raped at Lahousse.

Another mail and the postal that tells of the women and children at Mons who were forced to march on their own soldiers, acting as a screen for the German troopers. Read that the 50 who refused to go on were bayoneted. You might receive 50 postals, each telling of similar acts which can be verified. Read and then calm yourself to the statistics that inform you that before the war we purchased souvenir post cards and lithographs from Germany to the amount of nearly \$2,000,000 annually.

Do it again. Surely not while we are in our right minds. Sign our names to a postal card made in that empire of rape? My God, no, and that we may never be tricked into unconscious violation of this just resolve, Mr. Buyer, it's up to you.

The Immortal Dead.

In a little French village well within hearing of the incessant boom of the Kaiser's cannon, Isaac Marcosson, that great American writer, applied for lodging one night at the cottage of an old French woman. She greeted him courteously, but before she asked him to sit down took him to the side of her fireplace and pointed to the wall. Pinned to a little French flag were three little metal tags with the identification numbers of her three sons. Below each tag was pinned the French Croix de Guerre. As Marcosson stood at salute, paying his silent tribute to the immortal dead, and to this brave old lady's supreme sacrifice, she took from the mantel a French wrist watch. Her last boy had worn it until a German grenade had ended his brave effort to stem the unprovoked invasion of the land he loved better than life. One of his comrades had taken that watch from his wrist, wound it up and sent it back to the old mother in the village back of the Marne. It was still running when it was put into her trembling hands. To her the ticking of that watch, said Marcosson, is the beating of that boy's heart, and as it registers the passing of time it is also registering the passing of a cursed power that has been allowed for half a century to prepare colossally for the brutal domination of the world. Is this just another story to tug at your heart strings? You be the judge. Before Germany and Austria turned loose their hellish hordes we imported annually from them over \$1,000,000 worth of clocks and watches.

Millions of graves have been filled with brave young men who were alive, happy and ambitious three years ago. The wrist watches of many of those boys have come back with their little tin tags. There is no necessity for us to buy timepieces from these peoples who have so titanically and treacherously caused the death of the flower of this century's manhood. There are plenty of good clocks and watches manufactured right

Perpetuate American Industry.

Since the war began razor factories in the United States have enjoyed a greatly increased business. Their employees are well-paid, contented Americans. This industry must be perpetuated. German competition in the days to come should suffer a handicap in proportion to German crimes of today.

When the dove of peace lights in the pool of blood, shall we go on buying German razors? It doesn't seem reasonable, but, Mr. Buyer, it's up to you.

Two Canadian Red Cross nurses outraged. Their hands chopped off and their tongues cut out that they might never tell the hideous story of the frightful cruelties perpetrated upon them. In America hundreds of thousands of Red Cross workers are using shears and scissors to make bandages. Before the war we bought 600,000 dozen shears and scissors from the Central Powers annually. American factories making shears and shears are busy places now, and they are making very good scissors and shears. After the war, German or American? Mr. Buyer, it's up to you.

Belgium, poor, brave, outraged little Belgium! When Germany threw to the winds a treaty she termed a scrap of paper, she not only shredded her honor, but tore to bits business contracts that will never be pasted together again. America has fed starving Belgium. We fed and clothed and cared for her suffering people long before we became her proud ally on the battlefields. Thousands of orphaned Belgian and French children have been adopted into American homes. In the days to come are we going to force these children to play with German-made toys. God forbid! American toy manufacturers have stripped us of the last vestige of an excuse for the purchase of toys from the Huns. Our factories are making more toys than we ever imported, and they are not the flimsy jim-cracks we formerly bought from abroad. They are largely exercise toys which develop a child's body, or mechanical or structural toys which train the mind. Before the war we imported \$8,000,000 worth of toys from the Central Powers. Who will make our kiddies' toys in the days to come? Once more, Mr. Buyer, it's up to you.

here at home, and in the days to come keep that in mind. Mr. Buyer, you are going into the front-line trenches to protect us from such merchandise; in the name of that old French mother, watch your step.

Music Outraged.

"Music, that sublime art which affects the passions by sound. Few who have not felt its charms and acknowledged its expressions to be intelligible to the heart."

Music outraged. Raise the curtain of Kultur ever so little and peek at those villages of France and Belgium occupied by the invaders. Before your ever-widening, horror-stricken eyes is an unearthly panorama of encouraged lust. Villages burning everywhere, the streets strewn with the viciously flung bodies of the helpless inhabitants. From a house before you comes the terrified shrieks of a young girl who is being outraged. Suddenly the door of this house is burst open and an old man is hurled into the street. It is the grandfather of the girl whose screams make your blood run cold. He is 75 years of age, and has gone to her rescue. As the forcefully impelled body of that courageous old gentleman strikes on the cobblestones the crowd of half-drunk soldiers, on whose belts you see inscribed "Gott is with us," begin jumping with fiendish glee upon him. Their heavy, hob-nailed marching boots quickly reduce his frail body to a battered, bloody mass.

No, Mr. American, these are not hallucinations of your own imagining. They are actual sights made hideously clear by burning buildings which are being wantonly destroyed. Then you see a load of straw on a quaint two-wheeled cart coming down the street. It is stopped. Oil is thrown over it, and in its highly inflammable state the willing hands of the Huns throw it into a cellar where a large number of women and children have taken refuge. And then, merciful God, a laughing soldier of Wilhelm, the Brute of Berlin, scratches a German-made match and one more absolutely inhuman atrocity has blotched the historical page of a couple of nations whose thin veneer of civilization has been scraped away in a war that is but a few days old. Where? Well, the name of the town was Charleroi.

And from up the street came the sound of outraged music from stolen gramophones, accordions and a pianola. The officers were singing. A musical entertainment in celebration of a victory.

Before the war musical instruments, gramophone motors, player pianos; yes, we bought a lot of them from these twin nations of rapine. After the war? In the name of the angels who sing saddened music in heaven as they look down upon music outraged, no more musical instruments from Germany and Austria. Stop it, Mr. Buyer. Stop it for all time. We have the right to expect it of you.

Plain, Horrible Truths.

You may well dread to go on reading this, but the straight, plain, horrible truths that have come to us fully verified have been kept out of print long enough. It is high time all our people knew of them.

At Merlant the soldiers of Germany amused themselves as might the arch fiends of hell. Their last act in the neighboring village of Etre'py was to club to death an old woman 83 years of age. That particular group of soldiers seemed to be possessed of an inhuman desire to kill old people. They signalized their arrival in Merlant by tying an old man of 70 to the tail of a horse which they beat into a frenzy of terror before they turned it loose to drag the old man to death.

And the barbed wire of No Man's Land separates us from those soldiers. Over 200 miles of such entanglements on the western front. Recently the Kaiser's factories put out a new wire containing a lot more carbon than had been previously used in the manufacture of such product. There wasn't a single-handed plier in the American army that would cut it. Word of the improvement came to us in America with samples of the wire our Sammies had obtained with bolt cutters. The problem was put up to 26 patriotic plier manufacturers who met in New York with a well-known young army officer. Every manufacturer present threw his patents on the table and said to the others, "help yourselves." One week later those plier manufacturers met again and brought with them five American-made single-handed pliers that cut the German's new wire with ease. The answers are beginning to come in, and those far-flung entanglements are going to be cut just as surely as the ever-increasing forces of Americans are going to be in on the killing. The armies of the Cen-

tral Powers have passed their meridian. From now on they are going to taste some of the defeats they have inflicted.

But we were speaking of pliers. Before the war they were selling about \$200,000 worth of pliers in the United States each year. Good-by, business. Those American plier manufacturers who produced the tools to cut Germany's high-carbon wire are going to get what they are entitled to.

And the wire those pliers cut. How about German wire goods? In wire and wire articles they enjoyed about \$2,750,000 worth of business every year over here. There are wire mills and wire goods factories here at home that are a year or two behind with domestic orders merely because the needs of the Government come first, and Uncle Sam is getting their output.

When We Break Through.

When our boys break through and sweep over that town of Sommeilles and give its inhabitants the first just government they have had since shortly after the war began, what are they going to find? Why they will again hear verified the story of the two women and four children who took refuge in Mr. Adnot's cellar, from which they were dragged. German soldiers raped both these women, assaulted them under most atrocious circumstances. The children shrieked, one had its head cut off and two of the other little chaps had their right hands cut off.

Are we going to cut off the import of German and Austrian wire goods? Are we going to cut off shipments of German-made pliers into this country? Possibly we won't. It may be that we don't quite understand ourselves, and some perverted power unknown to us will keep up that old business relation, but my candid belief is that a great nation of men and women who won't forget are going to stand right squarely back of the fellow who is too busy ever to see a German or Austrian business representative selling these lines. Yes, there's little doubt about it, Mr. Buyer. It's up to you.

A Bavarian soldier, writing home from Belgium, said: "I have bayoneted seven women and four young girls in five minutes." Great, brave, heroic representative of his country, wasn't he.

A woman over 90 years of age bayoneted in bed.

At Senlis, France, a civilian tied to a post and bayoneted. His stomach torn open.

At Morelle, a civilian shot for helping a wounded French soldier. Across the street a little lame boy wantonly murdered. It seems endless. There are so many scores of these outrages on record that the overwhelming evidence first sickens and then shocks us to the stern necessity of cleaning this mess up for all time.

Many Americans have motored over quaint, beautiful, picturesque old France and through the busy, thrifty, interesting little Kingdom of Belgium. Many are motoring there now, driving or riding in conveyances branded with the Red Cross, which is respected by all allied armies and disrespected by those hell-hounds of the Central Powers. These motors roll on rubber-tired wheels.

Give us another thing to think of—rubber—made into hot-water bottles, hose, gloves, tires and a hundred common items of commerce. Before the war \$3,500,000 of our money found its way to Germany each year to purchase rubber goods. After the war—well, we will ride over those battlefields on more rubber tires to pay our tribute to those brave men who fought and died there. We will visit those towns where Germany and Austria mocked God and shook their mailed fists in the face of civilization. But we won't ride on German-made tires, and here at home "made in Germany" on a thing of rubber will rob it absolutely of any commercial value. Keep it out. We don't want it now, and we won't want it then. Mr. Buyer, it's up to you.

A Dastardly Enemy.

In a recent speech John Kendrick Bangs said: "I want to tell you what the Hun is doing—tell you what kind of an enemy we are up against at the end of four years. Six weeks ago I held on my knee a little boy who, only seven years old, was playing in a little village that had not been bombarded. Then the Huns dropped bombs from their airplanes and killed some of the old men and women in his town. After they had passed the child was allowed to run out and play. On the road he found a toy—one of those toys we used to get at our children's parties with fancy caps and verses in them. He picked it up—as he was intended to do. He thought it was a toy—as it was intended that he should.

Then he tried to break it apart—as it was also intended that he should do. Five hours later, when that fellow regained consciousness, there was only one piece left on his left hand. All the rest had been broken into pieces."

Is there a man with good red blood in his veins who would not go over to help put such beasts out of existence as could do such a thing as this?

The airplane that carried that vicious toy could hardly be made without the use of aluminum. The Hun machines built of more aluminum have been defenseless cities in England. Still more of them have successfully attacked hospitals and dressing stations. They have been at it for three years and their attacks have been carefully planned, vicious murders. The victims have been civilians, women, little wounded soldiers, doctors and nurses.

Before the war they sold us nearly \$4,000,000 worth of aluminum and aluminum wares every year.

There's no excuse for that when peace comes to a gentle mantle over a world so horribly trembled, not a bit of it. American manufacturers have turned into their own, and we are going to keep them there.

Some distant day, when the German Crown Prince has taken a German-made aluminum saucer and boiled the Atlantic Ocean down to where the victims of German submarine warfare lie on dry land, we will forget, but until that time no more German or Austrian-made aluminum in any form. And still, Mr. Buyer, it's up to you.

Lest We Forget.

We could go on endlessly matching each hideous human atrocity with an article on which Germany or Austria enjoyed American business, but it is useless to continue to convince when we are already over the subject. We could measure miles of dead French, English, Italians, Belgians, Roumanians, Greeks and American soldiers with a German-made tape and then forever blacklist German-made measuring instruments. The sights seen through periscopes in field glasses have killed their optical glass business. The pictures taken with German-made cameras have killed their lens business. Oh, it's endless. The Germans and Austrians have repeatedly said that business is our God. Let's not argue with them. They are worth it. Let's allow them to continue the slaughter. Yes, the Central Powers may have their way on that little subject. Our business is just as good enough so that it will not go to Germany and Austria in the days to come. Price may control some things but the purchase of goods by Americans from the Central Powers involves a certain thing as well known as highly regarded in America as it is little known or disregarded in Germany and Austria. That thing is personal honor.

No true American would in any way knowingly impair that sacred thing, nor would he allow his fellow American to be deceived or imposed upon. Guard this country against the trade impositions and indignities that are sure to be attempted are keen, intelligent, resourceful, competent men in whom we have implicit trust. Mr. Buyer, we are glad to put it up to you.

To Manufacture Trucks and Tractors in Houston.

Houston, Tex., November 1.—[Special.]—It is announced by J. E. Blevens, president and general manager of the Southern Motor Manufacturing Co., that the contract for the erection of the buildings and installation of the machinery for its plant here will be let soon. It will manufacture tractors, trucks and trailers. More than 30 cars of machinery and other material that will enter into the construction of the plant have arrived. The company plans to engage in the manufacture of pleasure automobiles when the war is over. It has booked orders for about 2000 trucks and 500 motor trucks. It is stated that the company is made up of nearly 7000 shareholders in the States of Texas, Oklahoma, Louisiana, Tennessee and Mexico, and has arranged with more than 100 dealers to handle its product.

The officers of the Southern Motor Manufacturing Association are as follows: Jacques E. Blevens, president and general manager; H. E. Gordon, first vice president; J. S. Arthur, assistant general manager; E. Shively, general auditor; F. E. Crotto, chief engineer; W. S. Weaver, superintendent of trailer production; F. A. Blevens, purchasing agent.

Concrete Shipbuilding Work in England

Marked progress in concrete ship work is being made in Great Britain, and the rapidity of clearing land and establishing a concrete ship plant may rival some of the rapid construction work in America. In the September Engineering Supplement of the London Times some interesting details of concrete shipbuilding and discussions of the problems are found. The supplement has the following on this subject:

In the present article an account will be given of some shipyards on the South Coast, where some 18 concrete vessels are in course of construction, and several others will shortly be started. While complying with the requirements of the Admiralty in respect of capacity and accommodation generally, the vessels embody three distinct systems of design involving corresponding differences in the constructive methods adopted.

The Lake Shipyard at Hamworthy, in the western part of Poole Harbor, occupies a site of about 250 acres, with a water frontage of 1¼ miles. It was established by Messrs. Hill, Richards and Company, in conjunction with the Marine and General Concrete Construction Syndicate. In December last the work of laying out was begun under the direction of Mr. E. O. Williams, Mr. Anthony G. Lyster acting as consulting engineer and ship designer. The establishment, where over 1000 men are employed, has road communication with Poole, railway sidings with a total length of nearly two miles have been laid in connection with the London and Southwestern Railway, and facilities have been provided for the landing of timber and other materials transported by water. At the eastern end a large yard has been set apart for the storage of timber brought in the form of logs from Brownsea Island, in the harbor, the logs being converted into planks, boards, and scantlings as required in a commodious sawmill, covered by roofing supported by long span of trusses of the Belfast type, and equipped with electrically driven circular saws and other machinery. The main buildings, conveniently grouped on the landward side of the slipways and shipbuilding sheds, comprise a long range of offices for the directors and the technical and clerical staffs of the company, machine and bar-bending shops, carpenters' and pattern-makers' shops, mould lofts, cement stores, and other storehouses, as well as accommodation on an ample scale for the comfort and convenience of the staff and workpeople.

The slipways are laid on solidly built concrete walls, and extend in a continuous row along the water front. At the present time about a dozen of them have been completed, and others in course of construction will bring the number up to 16 in this part of the yard. A continuous range of staging has been built behind and between all the slipways, with gangways near ground level and at deck level of the barges and tugs under construction, so as to give the workmen ready access to all parts of ships under construction and to facilitate the handling of materials. Screening machines for sand and aggregate, and concrete mixers, all electrically driven, are installed upon a projecting part of the staging at deck level, concrete being discharged into wagons running on contractors' railway lines laid along the whole range of slipways, with turntables enabling the trucks to be run down branch lines between the vessels.

To shelter the men, shuttering, reinforcement and concrete from the weather, the slipways are covered by roofing, and when finally completed the series of 16 slipways will virtually be housed in one long shed. The ships are of sufficient length for the building of ships up to 2500 tons deadweight capacity, but at present they are occupied by nothing larger than 1000-ton barges, eight of which are on the stocks, in addition to three steam tugs of 800 horse-power, all designed on the Williams system. The principal dimensions of the barges are: Length between perpendiculars, 190 feet; beam at load line, 33 feet; moulded depth, 15 feet 6 inches; draught when loaded, 12 feet. The tugs are 125 feet long between perpendiculars, and 27½ feet in beam on 12 foot water line, with a moulded depth of 14½ feet, and a draught of 12 feet.

The reinforcement of the concrete is effected by bars of relatively small size arranged horizontally and vertically to form a rectangular network in the sides and bottom. The larger bars, constituting tension and compression reinforcement in beams and struts, are con-

nected by web members in the form of ties, which are electrically welded in place, a method which is much more secure than the ordinary wiring, and at the same time keeps the bars in correct position without the aid of blocks or distance pieces. The vessels are constructed with double bottom and sides, enclosing the transverse frames, the holds thus being left free from inconvenient projections. The upper deck is designed on the cantilever principle, and receives support at the hatchways from a series of diagonal struts projecting from the sides. The double bottom is formed by two three-inch slabs about three feet apart, connected and stiffened by longitudinal and transverse ribs, the whole moulded so as to constitute a cellular monolithic structure. The transverse ribs are continued up the sides of the vessel between the two three-inch walls of the hull, the spaces between the ribs being occupied by hollow cores of concrete reinforced by wire netting. These cores are made in 24-inch lengths, and form the inner part of the moulds for the concrete of the walls and ribs, thereby saving labor and material and helping to consolidate the construction generally. The diagonal struts for the upper deck are branched out from the vertical ribs, the three structural elements at each rib constituting a triangular frame of great rigidity.

The barges under construction have two holds and three transverse watertight bulkheads, accommodation for the captain, crew, machinery, and stores being provided at the bow and stern. Some of them are designed for general cargo, and others for carrying oil in bulk. Those of the latter class have a longitudinal bulkhead dividing each hold into two oil tanks, and the longitudinal and transverse bulkheads are constructed on the cellular system, thus affording additional security against the penetration of water into the tanks in the event of damage to the concrete by accident. The vessels now on the slips, all of which are being constructed to the specification of the Controller-General of Merchant Shipbuilding, for classification by the British Corporation Registry, are well on the way to completion, and it is expected that two of the barges will be launched within the next six weeks. The first 1000-ton barge was successfully launched on August 24. The vessel proceeded very quietly down the ways and floated out into the harbor on a perfectly even keel, the opinion of the Admiralty and other shipbuilding experts present being that the arrangements for launching and the behavior of the vessel left nothing to be desired.

By arrangement with the Controller-General of Merchant Shipbuilding experimental shipbuilding plant has been laid down in the eastern part of Lake Shipyard for the purpose of constructing a 1000-ton barge in accordance with the system of Capt. J. H. Waller, D.S.O., R.E., who is personally superintending the work on behalf of the Controller-General. In this system the skin of the vessel is formed of pre-cast reinforced concrete plates, from which the ends of the reinforcing bars project. When the plates are put in position in the vessel the bars are interwoven and locked around a pair of bars placed in the space which is left between adjacent plates. These bars form part of the reinforcement of the transverse frames, extending along the bottom, up the sides, and under the deck of the vessel. After the bottom and side plates have been laid and secured in position the reinforcement of the frames is assembled, and the main longitudinal reinforcement, consisting of 2 inch diameter bars, for withstanding hogging and sagging stresses, is fixed in place. When the reinforcement for the bulkheads and the center keelson has been similarly assembled and secured, everything is ready for the final operation of concreting, which is a comparatively simple matter owing to the large proportion of pre-cast work in the hull. The decking, hatchway combings, and interior partition walls are constructed on the same principle as the hull. The plates are moulded on the flat, one on top of another, with a coat of whitewash between each pair. The correct disposition of the reinforcement is assured by edge moulds, and by trowelling the upper surface of each plate while the concrete is still wet a very smooth finish and a high degree of impermeability are obtained.

Captain Waller points out that his system reduces very considerably the amount of timber shuttering required, the quantity of both skilled and unskilled labor,

and the time occupied in construction. His experience indicates that 40 men working at once will suffice for the building of a 1000-ton barge, and he estimates that, given an adequate supply of pre-cast plates, it will ultimately be found possible to complete the hull of a vessel of this size within six weeks. The construction of the barge now on the stocks will take much longer in consequence of delays connected with the organization of the yard and the supply of materials. The work is now well advanced.

On the long spit of shingle known as Shoreham Beach, between the sea and the River Adur, is the shipbuilding establishment of Mr. John ver Mehr of Westminster. In the early months of the present year the site was a dreary waste of shingle, but desolation has given place to a busy shipyard, with numerous buildings used as offices, sawmills, joinery shops, steel-working and repair shops, storehouses, messrooms and a Y. M. C. A. canteen, and an electric-light and power station. Accommodation is also provided for concrete-mixing plant and for the storage of steel, cement, sand, aggregate, timber and other materials, and the whole establishment is well served by a system of light railways. Electricity is generated by a 57 K. W. dynamo, belt-driven from quick-revolution engines, which provide power for the operation of air compressors. All the machinery in the yard is operated by electric motors; electric light is available in all the buildings, berths and shipways, and compressed air is laid out where required for use in pneumatic tools and for cleaning purposes. Sand and aggregate for concrete-making are readily obtainable from the beach, the shingle being fine enough for use without crushing, and now that the yard has been equipped and stocked with timber, the only materials that have to be brought to the site are cement and steel.

Shoreham Harbor is of ample breadth and depth for launching operations, and the shingle bank is sufficiently deep and high to permit the excavation of dry-docks for the building of large vessels. Three docks have been constructed so far, each large enough to provide for the building of three 1000-ton barges simultaneously. At present they are simply pits, with sloping sides, the bottom having been levelled and floored with timber to act as the shuttering for the under side of the vessels. The side next the harbor will be removed when the vessels have been completed, thus allowing them to be floated away at high tide, and cofferdams will be erected to close the docks for subsequent operations. Actual shipbuilding operations were begun on July 1 last, and good progress has been made with the six barges now under construction in the docks. Nine reinforced concrete slipways have been constructed in another part of the yard for the building of 750 horse-power steam tugs, 125 feet in length.

The reinforcing material employed consists of expanded steel sheets and ordinary round bars. The sheets are corrugated in a special manner on the site, and the bars are laid and fixed in the corrugations, horizontally or vertically, as required. Each vessel has a cellular bottom, about 3 feet deep, and the side walls are constructed with a double skin. By building directly upon the dock flooring the use of keel and bilge blocks is avoided, and although the framework constituting the profile of the vessels is completely erected at the start, the shuttering itself is built up progressively with the deposition and tamping of the concrete. As the meshes of the expanded steel sheets offer much greater resistance to the flow of concrete than the bars and ties generally used, pneumatic hammers are employed for tamping the concrete in such a way as to set up vibration in the moulds, reinforcement and concrete, the result being the rapid settlement and consolidation of the last-mentioned material. The yard, which is under the management of Mr. Andrew Miller, the resident engineer, finds employment for over 500 men, of whom 115 are discharged soldiers.

To the Editor of the Times.

Sir.—The consideration of concrete as a material for the construction of ships seems a very opportune subject to have been introduced in the short paper by Mr. H. J. M. Creighton, read on July 23 at a meeting of the Faraday Society, an abstract of which was published in the August issue of the Engineering Supplement.

The author in this paper, which he entitles "Reinforced Concrete Versus Salt, Brine and Sea Water," admits that concrete may (except in very exceptional circumstances) be more or less porous, its waterproof condition depending in no small degree upon the richness of the concrete. Granted that the cement em-

ployed complies with the conditions of the British Standard Specification for Portland Cement, that the aggregate consists of small, solid, clean and angular-shaped material, capable of passing through a sieve of specified mesh, and that the sand is composed of hard silicious grains, free from animal or vegetable matter, and satisfactorily gritty, it seems expedient, in order to secure a monolithic hull, that the concrete formation should be carried out continuously, so as not to allow an unfinished portion to become set before any required addition is made thereto. The constructor desirous of eliminating porosity in his concrete would, of course, not allow any coke breeze or boiler ashes to constitute any part of the aggregate. Lime liberated in the normal setting of the cement would tend to react upon any magnesium salts in the water, and doubtless exercise a destructive influence in porous concrete.

If sea water is permitted to be employed for making the cement, it should be clean sea water, i. e., free of detrimental elements such as the author names. The general chemical results quoted by him are not disputed, and the effect of electrolysis under wet conditions is accepted; but he attributes much of the mischief he describes, as contributed by the action of sea water or salt influence, to the conduct of the reinforced metal, whereas the reinforced metal *per se* is not the primary cause, because if the concrete were not porous the reinforcement embedded therein would not suffer, but would fulfill the object of its use in the concrete.

The section adopted for ships, whether in the case of a hull of single or of double skin, or with a flat bottom, or other form suitable for flotation, requires the temporary framing to be of a form which does not favor that complete ramming which non-porous concrete requires; and an exposed concrete surface subject to sudden shock, such as that caused by collision, needs exterior timber belting to be attached for the protection of the vessel when coming alongside a quay wall, jetty or pier, and is as much in need of timber fendering, especially between flotation levels, as a quay wall that has been built with a concrete face.

No details are given of the Schoop metal spraying process (quoted by the author), and in the absence of such data the use of this or of any similar agent cannot be accepted by marine constructors as satisfactory for ensuring waterproof conditions.

A. T. WALMSLEY, M.Inst.C.E.

9 Victoria street, Westminster.

Successful Co-operative Movement Among Small Farmers in Louisiana.

New Orleans, La., October 29—[Special.]—Centerville, St. Mary parish, is the center of a very fine co-operative farming movement. On land owned by the Centerville Co-operative Farmers' Association at South Bend plantation, in St. Mary, the first carload of cotton shipped from that parish in a very long time was sent out last week. The yield was about 1358 pounds to the acre.

South Bend is the scene of a very successful small-farm movement engineered and inspired by the success of the Centerville project, where they have for several seasons operated a co-operative sugar factory.

Diversified farming with cane as the big money crop is the plan upon which these lands are now being worked. They have their own barrel factory, and the bank statements of that district and war funds subscriptions indicate that the co-operative idea is producing very solid results.

Other co-operative syrup manufacturing projects are being brought out in various other parts of the sugar district.

Contracts for Railroad Buildings.

The Illinois Central Railroad has awarded a contract to Joseph E. Nelson & Sons of Chicago to build a combination passenger station, freight house and express building at Stithon, Ky., at an estimated cost of \$85,000. It will be 200 feet long and 40 feet wide, one story in height.

The same road has also given a contract to G. A. Johnson & Son of Chicago to build engine pits and pave a roundhouse at Jackson, Miss.

The St. Louis Southwestern Railway will erect with its own forces a one-story passenger station, of frame construction on concrete foundation, at Malden, Mo. It will be 156 feet long and 24 feet wide. Estimated cost \$6500.

Our Cover Page Editorials

PUBLISHED UNDER THE TITLE OF

"War Eagle Series"

Have been given the warmest praise in letters received by us from leaders in civil and military life, not only in America, but in England, France, Belgium, Italy, New Zealand, Australia.

The limited edition first published having been exhausted, we have had a second edition printed, and copies are now available.

The series contains twelve of the Cover Page Editorials taken from the MANUFACTURERS RECORD, beautifully printed on cards 9 1/4 x 12 1/4 inches, enclosed in portfolio envelopes. They will be mailed by us, or can be sent to you for remailing with your own complimentary card or letter.

Many of these editorials have been used in the Fourth Liberty Loan Campaign by the loan committees of various cities, and have been hung up in offices, factories, munition plants, and used by public speakers. They have served in many ways as an inspiration to those carrying on the many tasks contributing toward the winning of the war.

**Complete sets of twelve cards in envelopes,
\$1.25 per set**

Payable with order

MANUFACTURERS RECORD PUBLISHING CO.

BALTIMORE, MD.

Industrial Education and Citizenship

By REUBEN B. ROBERTSON, Canton, N. C.

The time has long since passed when the South could look upon its commercial activities as purely agricultural in character. Its industries and its natural resources were rapidly being developed prior to the war, and war conditions are serving to intensify this progress.

Our nation is making tremendous strides in its work of building up a merchant marine, and when the war is over, we will focus our attention to a greater extent than ever before on industrial development as the means of providing materials for filling our ships for the foreign trade which we should enjoy.

The industrial centers of the North adjacent to the Atlantic seaports have been developed beyond their facilities in the way of transportation and labor, this fact having recently received official recognition through the order against the establishment of further war industries in the northeastern zone.

Our newly developed Southern ports, our exceptional natural resources and our excellent labor conditions considered in connection with these facts, point definitely to far greater industrial and commercial expansion in the South in the period following the war than we have yet seen. The South is, therefore, directly interested in the problems which accompany industrial growth.

The tendency of the time is toward standardization of manufacture in big units—units large enough to obtain maximum efficiency and yet fall short of monopoly. The big unit has unquestionably justified itself by lowered cost of production, and in considering the industrial future of the South we must take into account the industrial relations which come about through big unit production.

The large industrial enterprise brings many workmen together in intimate daily contact and with many interests in common; it gives opportunity for organized effort and concerted action which does not exist in like degree in the small isolated industrial unit.

We have recently seen in the action of the Russian Bolsheviks a splendid example of the power of an organized minority to control the destinies of a passive and unorganized majority. We know that the treachery of this organized minority is today affecting the happiness and welfare of our own people, although separated from them by thousands of miles.

With the opportunity for organization that will exist among industrial workers of the South we must expect that actual organization will follow and that the power resulting therefrom will be exercised to a greater or less extent.

If that power is exercised wisely and judiciously, with consideration for the rights and opportunities of all, and with some thought of the obligations and responsibilities imposed by citizenship, we have little to fear. If, however, that power falls into the hands of ignorant men actuated by selfish and short-sighted motives and lacking that breadth of view which comes from a true conception of the meaning of democracy, then we must expect injustice and a checking of all progress. I have too much confidence in the common sense of the American workmen, and particularly the Southern workmen, to believe that under any conditions such excesses as we have seen in Russia would be possible in this country; at the same time it must be recognized unscrupulous leaders appealing to the more selfish instincts are capable of leading sensible men into actions of which they should be ashamed.

The South is particularly favored in the character of men available for supplying its industrial enterprises.

The white workman is a native-born American, accustomed to the democratic viewpoint, accustomed to self-government, and above all, devoid of the class hatred and suspicion that make the foreign-born workman of the North such easy prey to the unscrupulous agitators. The white workingmen of the South in many instances have had very limited educational opportunities, but being free of the language barrier, readily grasp the details of industrial work, are easily interested and are resourceful and responsive to fair treatment, and under suitable conditions they can be made artisans of the highest character.

The colored laborer is excellent for certain classes of work, and when sympathetically handled is a cheery and diligent workman, and furnishes an abundant sup-

ply for the kinds of work which the white man cannot or will not do. The two elements of labor supplement each other and form as a whole an exceptional working class.

The Southern workman is as yet unspoiled by the hateful doctrines that are disseminated by the I. W. W. and other organizations of similar character. Whether he remains unspoiled, free from class consciousness, and responsive to the more humanizing activities, or becomes hostile and destructive in thought and action, depends on what sort of influences are allowed to surround him and to affect his daily thoughts. If the field is left open without contest to the demagogue and the more irresponsible elements in our community, we have no one but ourselves to blame if the results that follow are displeasing.

It is essentially an educational problem. No school course should be considered complete that does not provide for adequate emphasis on the real meaning of democracy. The schools can be made to help in training the coming generations in the essentials of citizenship and to an appreciation of its responsibilities, but the schools cannot make their work retroactive. Those beyond school age are the ones who for the most part will constitute the working class for the immediate future, and they must be reached in some other way. Such uplifting or broadening influences as can be applied must be of such a character that they do not interfere with the workman's ability to earn a livelihood, or to support his family.

The clergyman, the doctor, the lawyer and the broad-minded statesman; in fact, all who come in daily contact with the workmen, have their influence on his mental attitude. A further and, to my mind a very important influence, is that exercised by the employer who has earned the confidence and respect of his workmen. The employer's direct authority is, of course, limited to matters pertaining to the business; the power of his example, however, extends much further into the more intimate affairs of the workman's daily life.

If the employer is disinterested, public spirited, unselfish in his outlook on community matters, the attitude of his workmen is likely to have something of the same character. It is appropriate, therefore, that educational work directed towards elevating the workman to a higher plane of citizenship should have the active and enthusiastic support of the employer. The situation that confronts the employer involves at the same time, an opportunity and a responsibility.

The educational influences that can be exercised by the employer are only to a limited extent of the classroom variety. Vocational training schools are already an important feature of organization of some of the larger industries. We must not expect to make mechanical engineers, expert accountants or theoretical scientists out of all our workmen, some undoubtedly will develop who should properly be encouraged to carry on their work into such lines, but in the main we must be satisfied if we succeed in developing an atmosphere friendly to the better things.

The ideal workman appreciates that he owes some duty to others, is considerate, is reasonably stable, not a drifter; he takes a pride in his work, is ambitious, thrifty and loyal. These same qualities mean citizenship of a high character, and when we encourage a workman to better himself along these lines we are bettering the community by giving it a higher class citizen—our industrial enterprise thereupon becomes in a measure a college of citizenship.

The industrial accident has been, and still is to some extent, a great source of loss; not only to the individual but also to the community. When the magnitude of this loss was realized efforts were made to check it by the installation of safeguards, but years of effort have proven that the most effective way of reducing the accident percentage is by a vigorous educational campaign. Under my own observation there have been instances where the reduction has amounted to 45 or 50 per cent. as compared with the days when no educational campaign was invoked.

Safety first work in the mills has an enormous direct value through its conservation of human life. It also has another value of almost equal importance, as it is one of the first ways in which employer and employee find common ground for co-operative effort—each is led

to appreciate more keenly his obligations toward others, the employer sees that to get the best results he must educate the workman against himself, against his own thoughtless acts; the workman is led to look to the safety of his fellow-worker, as well as that of himself.

A rolling stone gathers no moss, neither does the wandering workman accumulate a bank account. A workman who persists in looking upon himself as a transient is of little value to his employer and of even less value to his community. He takes no part in the community activities and naturally has no interest in its welfare or its permanent progress. Stability in the workman should be encouraged in every way possible. He should be taught that liberty and loafing are not synonymous. He should first of all have fair wages and healthful working conditions, should be encouraged to save, to build his own home, and of course should not be discharged until all efforts to locate him in suitable work had been exhausted. Some employers have found it worth while to provide for automatic increases in wages proportioned according to the length of service of the employee. Methods such as these reduce the labor turnover and relieve the employer of the cost of incessantly instructing new men, and certainly benefit the community by making of the workman an interested resident instead of an indifferent transient.

One of the greatest needs of the day is for an Industrial David Grayson, one who can teach again the joy of doing simple things well. We cannot all have white-shirt jobs, and if we must have banquets somebody has to wash the dishes; even a dish-washer may learn to do his work efficiently and thereby find contentment. The employer can often lighten the burdens of an otherwise dreary job by explaining its meaning and its relation to other parts of the work, encouraging thoughtful suggestions for improvement and giving the worker opportunity for exercising such creative faculties as he may have.

I have seen such instances where a slow and sullen workman has been transformed into an enthusiastic and interested one by the frank and cordial acceptance by his superior of a suggestion for improvement. Sometimes the suggestion has no great intrinsic value, but its acceptance certainly serves to stimulate further thought on the part of the worker, gives him a pleasure in the handling of a machine which formerly meant mere drudgery; he finds contentment in his simple job to a greater extent than before, is therefore less likely to become a drifter, and more easily reached by uplifting influences (Edison).

Thomas Edison probably works longer hours than any man in public life today; his daily occupation, however, is really not work for him at all, so intense is his interest and his enthusiasm. If we can give the workman pleasure in his daily task, then it will be easier to demonstrate to him that social progress demands maximum production rather than minimum hours as the goal of his efforts.

"Materials, machinery and men" were once said to be the essentials of industry. In the modern organization the same elements are recognized but their order of importance is changed to read "men, machinery and materials." The employer who today looks upon his men simply as so many pawns in the industrial game and ignores their human aspirations and desires is exceptional and deserves no success. The day of labor exploitation has gone never to return. In the smaller industry personal contact between employer and employee is possible, and the stimulation of a spirit of friendly co-operation needs only the personal example of the employer.

The wise and far-sighted exercise of the powers resulting from organized and concerted effort involves some knowledge of the underlying principles of economics. This knowledge cannot in the case of the workmen be acquired from books, it must be obtained by experience and observation. When the Russian workmen took over the big industrial plants, they decreed that the chemist and the expert were parasites and that the industry should no longer be burdened with them. It required the destruction of about a quarter of a million dollars worth of raw material to convince them that there was room in social structures for an expert.

We all know that responsibility is one of the greatest of educational and broadening influences; the Radical frequently becomes conservative when faced by actualities instead of theoretical considerations. The employee should be encouraged in all possible ways to acquire those things and those experiences which make for con-

servatism; he should be encouraged to save, to exercise foresight, to own property and should be made to appreciate the meaning of responsibility.

Some of the larger industrial organizations have co-operative insurance associations managed by the employees themselves, which provide sickness and death benefits at minimum cost. I have had the opportunity to observe the working of an association of this sort which I believe has had exceptional success. Beginning purely as an insurance association, by careful and efficient management it accumulated a considerable surplus which supplied the necessary working capital for further activities of a co-operative nature. The management of a cannery, a bakery, a retail coal business, of farm lands, of a restaurant for employees, of a salary loan business and of a co-operative grocery added to the income of the association, while at the same time furnishing necessities at prices below these on the local market. Some of these enterprises were equipped by the employing company, but turned over to the association to manage, not only for the purpose of forestalling any lurking suspicion of exploitation that might exist, but also for the educational effort of responsibility. A co-operative association of this sort could not be other than an educational and stabilizing influence through the insight it gave the members into the fundamentals of business and through the stimulus to thrift that it furnished.

The so-called welfare work of some employees include some of the above activities; the term "welfare work," however, carries with it a suggestion of paternalism which of course should be avoided. To get the desired results it seems to me that these activities should be designated and encouraged by the progressive employer as part of a broad scheme of education which, while giving the workman greater insight into the fundamental principles of his work, will at the same time elevate him to higher conceptions of his duty to his fellow-workers, his community and to the State.

A discussion of the industrial future could barely be complete without at least a reference to the "democratization of industry" of which so much is said in ultra progressive circles. The exclusive control of industrial activities by the workers themselves to my mind involves diffusion of effort where concentration is desirable, discouragement of personal initiative where there should be stimulation, "deprives industry, foresight and sagacity of their fruits," and is wholly inconsistent with social progress and with the proper development of our resources. The conditions of free competition in industries often partake of the character of warfare, and at times call for the same freedom of decision, the same ability to take prompt action and to enforce discipline that is required for military action. The man with the big idea must not be hampered by having to convince those whom chance makes his fellow-workers that his plan is feasible. If he wants to stake his all on the success of his venture he should be permitted to take the risk and if successful should have proportionate profit.

Under no system of workmen's control that I have seen discussed does the individual workman obligate himself to continued connection with the industry. Such an obligation would be construed as abridging his personal liberties and as amounting to slavery. At the same time under such a system the transient worker would have equal voice in the decision of matters of vital import to the industry with those who had its permanent welfare at heart. This impresses me as one of the fundamental inequalities of the proposition. I believe that workmen's control would involve grave danger of changing social liberty into social license.

Our workingman should have some experience in practical economics, but this should come through responsibility for such co-operative activities as can be logically developed from the grouping together of a larger number of men, and not through assumption of control of the industry itself.

We will not pattern our social and industrial progress on the radicalism of Mexico and Russia, but rather will be guided by their experience and avoid their blunders.

The industry of the future will, I believe, continue to be autocratic in character, but it will be a benevolent, humanized autocracy, with workman and employer each appreciating the humanity of the other, and recognizing their obligations to each other and their paramount obligations to the State.

"Nation Terribly Embarrassed" by German Peace Note

AMERICAN PEOPLE AS WELL AS ALLIES STERNLY DEMAND PUNISHMENT FOR UNSPEAKABLE ATROCITIES OF THE HUN — RECORD OF UNFORTUNATE EXPRESSIONS, CAUSING UNEASINESS THROUGHOUT THE WORLD.

[The Black Diamond, Chicago.]

The German Chancellor presumes to ask peace without violence at this time. What he means is that after Germany has inflicted all the punishment it can upon the rest of the world, the war shall end before it has really been punished at all.

The reply of the President was, we believe, most unfortunate. He consents to discuss an armistice on terms named by the allied military force and provided the Prussian King is no longer the German Emperor. It was the same sort of an uncertain note which has caused the whole civilized world to feel uneasy over what he was going to say.

Regardless, however, of what his answer was, there is only one that this country and our Allies will allow. That is the answer which the returned soldiers give to the American men when they address public audiences—*after they have asked the women to retire.*

In those confidential exchanges between man and man, detailed facts are given about unspeakable atrocities which have been committed by the Germans. The scarlet mark of the Germans has been put on American prisoners, even as it has been put on the women and children of Belgium and France. No human power can remove it. So long as it stands a vivid accusation of German brutality, there is only one answer which any self-respecting American can give. It will and must be that until Germany has experienced some of the punishment which it inflicted on the rest of the world there cannot be even talk of peace. This, in a word, is time for a return to the old rabbinical doctrine of "an eye for an eye and a tooth for a tooth."

The uneasiness of the world as to our national position rests, unfortunately, on the record of our spokesman. Those who are conducting the negotiations for us have not been convincingly firm through an inevitable war. The first appearance of our spokesman in the international arena was with a suggestion that, regardless of the rape of Belgium, American manhood must maintain a neutrality not only of act, but of thought and word.

His second appearance was with the suggestion that this war must terminate in a peace without victory.

His third suggestion was that all peoples should have the right of self-determination as to their rulers and form of government, including, therefore, the right of Germany to continue its Prussian rule which perpetually has disturbed the peace of the world.

His fourth appearance was with a demand for the freedom of the seas. This demand, if complied with, would have stripped England of that fleet which, in the name of the Christian Anglo-Saxon race, has maintained the peace of the world for 100 years and has policed in the meantime a seventh of the globe.

His fifth appearance was with the suggestion that, after we had created a machine, which is finally powerful enough to do unto Germany what it has done unto others, we should now withhold our hand.

And, before all this, he had from Ambassador Gerard full information that war was inevitable! Yet Mr. Garrison, who pleaded that America prepare adequately for war, was allowed to quit the Cabinet to give place to an outspoken pacifist.

The governments of Great Britain, France, Italy and Belgium, who have suffered the most and who have, therefore, the most right to say what the future trend of negotiations shall be, are not willing to accept that leadership which wobbled on the brink of war and would now end it prematurely. In fact, alarmed over the potentialities of this exchange of notes, they are now insisting upon a "united political front to Germany." They say: "We have Foch and a united military front. Let us have another leader supported by a united political front."

The people of the United States, having taken up arms shoulder to shoulder with our Allies, are not going to surrender now the victory which the addition of their forces makes clearly possible.

The situation is terribly embarrassing to the nation. Our leaders have written themselves into at least an

outward consent to negotiate, and Germany has in tail suggested that we begin. Despite the answer which the American people can make to the note of the German Government is that same answer which is given by all returned soldiers who speak at public audiences—*after the women have retired.*

Inspired by the hope which our diplomacy has ordered, the German Chancellor, in a speech on Wednesday, pleaded for a peace without violence. How can there be a peace without violence to end a war which was conceived in violence and carried on with brutality and pot marked with atrocities? America, which has suffered so little, has still suffered enough to insist that Germany shall be paid in her own coin. The marks on Germany's victims cry aloud for it.

FISH PRODUCT MANUFACTURE ON A SCALE.

A New Company Begins Business at Fort Myers and Other Florida Points.

An important industry is in process of being established at Fort Myers, Florida, under the name of the American Fish Products Co., which is to conduct fishing operations upon a very large scale and also the manufacture of fish products of all kinds. The high-priced food fish which have been caught by huge nets and have been sold to dealers for shipment to Northern markets, the other fish taken, including everything "from a devilfish to a fiddler crab," will be made into some product for which there is a demand. Nothing will be wasted.

It is stated that the investment will finally be about \$1,000,000, and that the Ocean Leather Co. of New York, which has existed for some time, is interested in this new enterprise. A contract has been let to Pitts of Punta Gorda, Fla., to erect a two-story fireproof building at Fort Myers 50x100 feet, which will extend out over the waters of the Caloosahatchie River on concrete piles, with a wharf on each side, this to be used as a receiving, processing and packing plant. In addition to this there will be what are called hydrating stations at several points, including Sanibel Island, Carlos Bay, Caxambas, Man's River and Bahia Honda. From these processing operations will be conducted and the raw material will be dehydrated and worked up before removal to the main plant at Fort Myers. Each station will handle about four tons of fish daily.

Fishing gangs are already preparing immense seines from half a mile to a mile long and strong enough to ensnare shark, porpoise, devil fish and other marine denizens. There will also be seines operated by machinery on shore which will drag in large quantities of fish at each haul. It is said that a half a minute. The hide thus obtained is to be turned into leather at a Northern tannery. The shark fins are made to yield a high-grade oil, and the bones prepared for food in various forms. Even the devilfish, the porpoise, ray, swordfish and large fish be handled for all that they are worth. None of these fish which are not fit for other purposes will be used to make fertilizer. Part of a devilfish is extremely white and makes beautiful leather.

Large numbers of sardines will be caught, and it is stated that a process has been found for their preservation without oil or chemicals, so that a more valuable product is provided at less cost than has been hitherto possible. Other fish are to be preserved in the same way.

A. Ehrenreich of New York is president of American Fish Products Co., Dr. George S. Shaw is manager, and S. Herlinger secretary, both at Fort Myers.

North Carolina Farmers Respond to Call for Greater Food Production

By F. H. JETER, Raleigh, N. C.

Lack of labor during 1918 has not kept the Tar Heel farmer from putting in an increased acreage of food crops. It is true that this increase has not been phenomenal, but a good substantial gain has been made over 1917, and the idea of growing food crops, rather than of depending entirely on cotton and corn, has gained a foothold which in itself is one of the most valuable things that could have happened to the State's agriculture.

Reports gathered on nearly 2000 farms in 29 representative counties of the State show that considerable advance in food production has been made. These counties, too, are widely separated, being over all sections of the State, representing the different types of soil and climatic conditions. Twenty-nine counties are represented in the reports made by the county agents to the director of the Agricultural Extension Service. These reports were collected for the purpose of finding just what was being done in increasing the acreage devoted to food crops in 1918 over that of 1917, so that if the difference was of enough importance an honor could be awarded to the farmer making the individual report.

Each of the 75 or more agents undertook the work, but some were not so successful, while the results from a number were not included because of incomplete reports. The results obtained, however, show that during 1917 the 1806 farms which were tabulated planted in the crops considered 109,201 acres. In 1918 these same crops on the same farms occupied 139,652 acres. This is an increase over 1917 of 30,451 acres, or, if figured on a percentage basis, an increase of 27.8 per cent. in crops. The average for each of the 1806 farms is 77.3 acres per farm, being an increase over 1917 of 16.8 acres per farm.

Only the main crops grown in North Carolina were considered in making the reports. Tobacco was excepted, because it has no value as food. The greatest single increase found in any crop was in the case of soy beans. This has been due, no doubt, to the good work of the agronomy division in familiarizing farmers with the value of the soy bean as a food crop, both the meal and the oil being utilized. Mr. C. B. Williams, chief of this division, has been making an intensive campaign for the greater production of soy beans for a period extending over the last four or five years. In this he has had the hearty co-operation of all the field workers attached to the Extension Service, and the result is seen in the fact that there was an increase in this crop in 1918 over that of 1917 of 105 per cent.; that is, the 1806 farms reporting grew only 4751 acres of soy beans in 1917, while in 1918 they grew 9755 acres, or an increase of 5004 acres.

Following soy beans, the next outstanding increase

was made with sorghum, the farmers increasing their acreage in 1918 over 1917 by 95.2 per cent. If this report is indicative of general farming conditions over the entire State, the sugar shortage will not be felt in North Carolina this winter so acutely as it was in the winter of 1917. The farms reporting grew only 469 acres of sorghum in 1917, but increased this to 916 acres in 1918, which was an increase of 447 acres. There is hardly a farm in North Carolina, however, which did not take part in this increase, as there is at present no road by which one can travel without hav-



SAMPLE FIELD OF OATS, WHICH WERE GROWN ALL OVER THE STATE.

ing his nose assailed by the odoriferous smell of sorghum juice being cooked for use as syrup.

North Carolina is not a livestock State, largely because its people have never felt that the growing of grass and forage crops is a lucrative proposition. The coming popularity of velvet beans as a soil improver and forage crop is beginning to be felt, however, in the eastern section of the State, and already two packing plants have been established in New Hanover county



PEANUTS ON MINTZ & MINTZ FARM (MILL BRANCH). MORE THAN ONE TON OF HAY SAVED—HOGS FATTENED ON THE PEANUTS.

in anticipation of the change which will soon be made in Eastern North Carolina agriculture. Velvet beans were increased in 1918, 86.6 per cent. The farms included in the tabulation concerned planted 1264 acres of velvet beans in 1917, but increased this to 2357 acres in 1918, being a total increase of 1093 acres.

Alfalfa is a new crop, and the acreage in North Carolina is not large, but it speaks well for the changing sentiment to say that this crop was increased 85.3 per cent. in 1918 over 1917.

Rye is not a new crop, having been grown in the State for many years, principally as a winter cover crop to be used for late fall, winter and early spring grazing. There was a recorded increase in this crop, however, of 81.2 per cent., 3011 acres being planted in 1917, 5457 being planted in 1918, or an increase on the farms considered of 2446 acres.

The increase in corn, while not so spectacular from the standpoint of actual acres planted, made by far the greatest gains. This is undoubtedly North Carolina's most important food crop, both for man and livestock, and the farms here considered planted 36,307 acres in 1917, increasing this to 44,924 acres in 1918, or an actual increase of 8617 acres, which is a 23.7 per cent. increase. That is, the 1806 farms considered planted an average of 24.9 acres per farm. As figured by Mr. J. M. Johnson of the Division of Farm Management, each farm needed a total of 550 bushels, which only requires a per acre yield of 22.1 bushels this fall. With thousands of acres of corn in North Carolina now making 50 bushels and over, and with the excellent prospects of the crop this year, it appears that these 22-acre yields will at least be averaged.

The percentage of wheat grown in 1918, because of the special campaign put on by the Agricultural Extension Service, made a recorded increase of 40.1 per cent. In 1917 these farms reported planting 4113 acres. In 1918 they planted 5799 acres, or an increase of 1686 acres.

Careful studies of all the reports by Mr. J. M. Johnson show that while corn made by far the greatest gains in actual acres, soy beans are now assuming almost as much importance as the corn, and made the second largest increase. Rye is not generally an important food crop in the State, but it ranked third in importance in acreage. Cowpeas and peanuts gained fourth and fifth places, respectively, in importance, while wheat and oats both made good gains. The other food and feed crops did not make such marked acreage gains, but the results as shown in the reports were very gratifying indeed, and showed an unmistakable response for increased food production.

On those farms where the food crops have been generally grown every year there was not such a marked increase. It was where the land has heretofore been devoted largely to the development of the so-called money crops that the greatest gains were recorded.

Both Irish and sweet potatoes are grown largely in the State, but not evenly distributed, many localities having a surplus and others planting hardly enough to supply their own home needs.

The home garden, however, in spite of a bad year, increased from five-tenths of an acre in size to six-tenths in 1918 as an average for 1806 farms. Many of the farms made no efforts to have gardens, but fully 85 per



SHEEP ON FARM OF GEORGE HOLDERNESSE, TARBORO, N. C. A 3 PER CENT. INCREASE IN STATE'S SHEEP POPULATION WAS MADE EARLY IN 1918.



PART OF HERD OF 12 COWS OF J. L. HAMLIN, SOUTHERN PINES, N. C.

cent. made provision for this important part of the farm management system.

All the bays, such as alfalfa, clover and other hays, showed an increase of 2663 acres, making a total reported for 1918 of 10,502 acres on all the farms, which is about six acres of hay per farm. When it is considered that each farm averages approximately 80 acres of cultivated crops, meaning that four heads of horses and mules must be fed, there is a requirement for at least 10 tons of hay per farm, in addition to the corn



CORN LAND DOING DOUBLE DUTY IN FOOD PRODUCTION—SOY BEANS BETWEEN THE ROWS.



VELVET BEANS ON MINTZ & MINTZ FARM, MILL BRANCH, BRUNSWICK COUNTY, N. C.

Figured as worth \$100 per acre for feed and as soil builder. A large herd of cattle stayed fat on them alone during the winter months.

stover generally grown. Therefore, unless the hay crops make rather unusual yields, there will be a shortage by next spring, requiring imported hays as feed.

In the way of livestock, the most marked gains were made in the number of brood sows kept and in hens set, with comparatively smaller gains in the number of pork hogs, cows, beef cattle and sheep. The records show that there is an increase of 2.3 brood sows per farm in 1918, against 1.8 sows in 1917. There are now 10.2 other hogs, or hogs for pork, and 1.5 milk cows per farm on each of the farms reporting. The number of hens set averaged around 11.81 per farm, and there are 37.9 other fowls besides those which were hatched and raised during the summer. The number of sheep, while small to start with, made a gain of 37.8 per cent. in 1918 over 1917, showing an average of about one-third of a sheep to each farm reporting.

Cotton, as a general thing, held its own over the State. The farms under consideration planted 26,644 acres in 1917, increasing this only by 708 acres for 1918, making a total of 27,352 acres, which is an increase of 2.6 per cent., and which means that each one of the farms planted at least 15 acres of cotton.

While these results only embrace 29 of the 100 counties of the State, they came from average farms in average counties, and are indicative, from the standpoint of actual figures, of just what has been done and the spirit of the people in responding to the request of the agricultural authorities for increased food production during 1918.

Mill to Make Rice Flour Exclusively.

New Orleans, La., Oct. 29.—[Special.]—The only exclusive rice flour mill in the United States will be in operation at Crowley, La., in a few weeks. It is owned and has been equipped and will be operated by the Louisiana State Rice Milling Co. It represents an initial investment of \$100,000. The operating personnel is being assembled to get things started immediately the installation of the necessary facilities have been completed.

OPPORTUNITIES FOR AMERICAN MANUFACTURES IN FRANCE.

Suggestions as to Lines of Action in Which There May Be Helpful Co-operation and not Competition.

Marius Merlin, American and English Firms Commission Agency.

Office, 49 Rue de la Republique, Lyon.

Lyon, France, October 14.

Editor *Manufacturers Record*:

In Lyon we are reading with pleasure and great interest the set of your editorials upon the vital question which arises from the war.

With you, we believe that once the fighting over, the Germans will not fail, with their customary mendacity, hypocrisy and lack of scruples, to violate the most elementary laws of decency as they already have all those of civilization and humanity.

There is no doubt whatever that they will come to us with hands outstretched and smiling lips and will address us in some way like this:

"It was a mistake. It was an error of our monarchical organization, of our militarism, but thanks to Heaven, we are now aware of what our duty must be and we firmly desire to join in the harmonious chorus of nations. You can depend on our help, and therefore kindly try this improved article of German manufacture. You will find it most satisfactory. Moreover, we are selling it cheaper than any similar American or English article, and that as an evident proof of our good-will."

And immediately in the tradesman's mind comes the idea of an interesting transaction!

It is the duty of every great paper to undertake our economic education, and I compliment the *MANUFACTURERS RECORD* for the campaign you conduct with such conspicuous perseverance.

Indeed, we should ever bear in mind that it would be a shame to forget, as well as it is impossible to rub out the horrible facts of Germany's fiendish will as impressed upon humanity.

All individual interests must give way before those of right and justice, which are vastly more important. And after the war in business life our course of action is clear: We must cast aside the German tradesmen and master the following sentence of the *Miami Herald*, printed in your paper of August 15, and which appears as quite typical:

"Perhaps after a new generation comes on the scene, men and women who could have no hand in the horrors which Germany has visited on the world, after the present generation is all dead, we may once again transact business with Germany, but not before."

Later on, perhaps, much later on, "our little nephews," as speaks the French fabulist, may, if they care, accept what comes from Germany, but as long as the war generations are living it would be a shame to see Americans, English or French carry on any communication whatever with a nation which, with firm resolve, has stamped out all the joy of life and all human liberties.

If the energies and output of the Allied trades are not sufficient for their needs, the Allies must go on helping each other in peace time as they did during the war. Americans, French, Britons, Italians, Serbians and Belgians must co-operate naturally and honestly in the markets all over the world, and some clear-sighted men have said that this co-operation, well conducted, can bring forth marvelous results.

America, chiefly, can secure on the French market the considerable trade once in the hands of the Germans, and for that she must adapt her methods of sale and export to the French needs; as a matter of fact, she must not consider what she can sell, but what can be bought from her.

America's future export trade should not be merely the sale of an intensive output, more than is required by home needs; it should also be specially adapted to foreign requirements. And, therefore, American manufacturers and producers who want to secure the French market will find it advisable to consider the opening of special lines of activities.

"Co-operation without competition" is the device we should bear in mind. If Americans and French manufacturers come in each others' way, none will be benefited; but if, for instance, the American manufacturer makes up what is wanting in the French one, mutual satisfaction will ensue. We can come to the conclusion that in future America should specialize in the output of articles in series, as well in the lines of iron, steel and wood as in those of tools and machinery. These

plain articles, manufactured in series, will meet the immediate needs of reconstruction work in the countries ravaged by the Germans.

All ready-made articles used in the building trade can be particularly designed for French customers. These articles are not yet manufactured in France, or if so, in a small way, and their prices are above those of items in an output in series.

From my point of view, I believe that America's future trade will find its way in this general course.

Later on we may consider the details of the problem, but from now it has been our desire in congratulating the *MANUFACTURERS RECORD* for their extremely interesting and patriotic campaign, to stress strongly upon what may be the basis of the Allies' international future business: "Co-operation, not competition."

MARIUS MERLIN.

Planning to Unionize Workers in Oil Fields of Mexico and United States.

Laredo, Tex., November 2.—[Special.]—It is stated by Herman Ross, an official of the American Federation of Labor, who arrived here recently from New York to make arrangements for the big international labor conference that is to be held here November 13 to 16, inclusive, that more than 2000 delegates will attend the meeting. Samuel Gompers, president of the American Federation of Labor, will preside over the conference, Mr. Ross said. Leaders of organized labor from Mexico, Cuba, Porto Rico and several countries of South and Central America will attend the meeting, according to reports received here. President Venustiano Carranza has promised to come to the border during the conference. He will receive the labor conference delegates in Nuevo Laredo, opposite Laredo.

It has just come to light that one of the purposes of the international conference is to bring about the unionizing of the laborers of the oil fields of Mexico and the United States. Delegations of oil workers from California, Louisiana, Texas, Oklahoma and Mexico will be present, it is learned.

The decision to hold an international labor conference here was the result of a study of labor conditions in the United States and Mexico by the American Federation of Labor Commission to the City of Mexico and the Mexican Labor Commission of Washington. It was proposed that a Pan-American Federation of Labor be established and to hold an international conference of labor representatives of the different countries at Laredo with this object in view.

As set forth in the preliminary announcement of the proposed conference, it will seek to bring about better conditions for workmen who emigrate from one country to another; to establish a better understanding and relationship between the people of the United States and the Latin-American countries; to extend the organization of workmen to embrace every kind of activity in which they may be employed.

President Wilson was invited to attend the conference, but the press of official business will prevent him from coming. It is stated, however, that he will prepare a message to the laboring men of the various countries represented, and that it will be delivered at the conference, probably through Mr. Gompers.

Arrangements for the accommodation and entertainment of the delegates are being made. In Nuevo Laredo, President Carranza will be royally welcomed, and a big celebration in his honor will be given, it is announced. It will be his first visit to this part of the border for several years.

To Train Men for Motor Transport Service.

A report from Fort Worth, Tex., says that construction of the Motor Transport Corps School at Camp Bowie, immediately south of the base hospital, at a cost of \$1,500,000, will begin very soon. It will be capable of turning out 2000 trained men each month. The buildings, which, according to estimates, will cost about \$750,000, will cover from 8 to 10 acres of ground; the rest of the appropriation will be expended for their equipment and surroundings.

Contract for Shells.

A contract has been awarded to the Kansas City Hay Press Co., Kansas City, Mo., to make 100,000 shells of 155 millimeters diameter (about six inches) for the Government. The first thousand shells must be ready for delivery by January 1, and it is proposed, when the factory runs full time, to produce them at the rate of 1000 a day. This contract, it is said, is only the first of several which the company will probably receive.

Unless Germans learn through the invasion of their own country by the allied troops the real meaning and the horrors of war, they will in a few years forget all present protestations of peace and be ready to start another war. We are not fighting merely to win this war, but to make it certain that Germany will never start another war. If we fail in our duty to invade and conquer Germany fully and completely, we shall be false to the future and millions will have to die in some future war because we proved too cowardly to really win this one.

The Only Possible "Healing Peace" Is One Secured by Surgeon's Knife

Southern Chemical Co., Inc.

El Paso, Tex., October 28.

Editor Manufacturers Record:

I have written four letters during the last two months, intending to forward them to you for publication, but each time decided not to do so, feeling that probably you were overburdened with communications of the same nature.

But in order to relieve my mind, and, I believe, also to discharge a duty, I am forwarding this communication to you with permission to publish it if you so desire. I watch the mails and read eagerly the MANUFACTURERS RECORD, and for the last four months have complied with your request, placing it in the hands of friends, and it makes the rounds, coming back to the office showing evidence of wear and tear, and I beg, not only in my own behalf, but on behalf of these friends, to personally thank you for the work you are doing in disclosing the true nature of the German cancer which has threatened the very life of civilization.

So much has been said and written during the past four years of the inhuman brutalities of the war-mad beasts that it has become commonplace, and a great many people pass it up as a matter of fact and had become so used to it that its full horror is overlooked, but your editorials and writings have the peculiar quality which imparts a life-like reality to the pictures you paint; hence the great value of your work, for which, without the spirit of flattery, many people have a deep feeling of gratitude to you, who may never be able to express this gratitude to you direct.

I regret greatly that I have passed the age when my services would be accepted by the Government for military duty, and I have often paraphrased in the form of a prayer the old familiar lines:

Backward, turn backward, oh, Time in thy flight,
Lop off a few years, so I can join in the fight!

I have, however, 12 nephews in military service, a sister, niece and nephew serving in munitions factory, and my wife has 14 nephews and cousins in the service with the Canadian troops, some of whom lost their lives and others severely wounded, and as these relatives are dear to us, I feel like giving expressions to my personal views on some phases of the world conflict which is probably nearing its close, and I hope that it may not be regarded as treasonable, for I yield to no man in loyalty to my country.

To make the world "safe for democracy," it seems to me that it must be made safe from "autocracy," and my prayer and hope is that our country may be kept free from that class of autocracy which would call on 100,000,000 people in the United States to give of their blood and their treasure to an extent never before seen in human history, in a land where all are supposed to be free and equal, and that they should be told in effect that all they had to do was to give up their money to pay the terrible cost of the war, and that their dear ones should be mourned in unmarked graves far from the land of their birth and that both their duty and their privilege ended, and that the great underlying questions should be settled arbitrarily by those whom by their franchise they had elevated to the high positions of honor and trust. "And that the people could have no voice whatever and no right to express their opinions or help to arrive at the proper basis of settlement of a war which in its very essence is the people's war and humanity's war."

If any man or coterie of men can plan a war

and plunge a nation into war without consulting the people of the nation, and this has been branded as the great evil of autocracy, it would seem to naturally follow that if one man or a small coterie of men should attempt to dictate the terms of settlement of a war in which every man, woman and child in the United States has been so vitally interested and who should be coolly told to keep their mouths shut and mind their own business, the tendency would seem to the writer to be bordering close to an autocracy which, if I am any judge of the spirit of true Americanism, the people of this United States will not submit to.

Both Christianity and democracy are on trial, and during the next thirty days will prove their right to continue and retain the confidence of the world in the principles which underly each. These coming days will be the most momentous in human history, and if our democracy and our Christianity should so far fail to measure up to the true standard of duty and opportunity that it should plead for forgiveness for the world's greatest criminals, "and for a peace without humiliation," "for a peace without adequate punishment," "for a healing peace," for a peace of maudlin, sickly sentimentality, where we should be so enamored with high sounding and meaningless rhetorical phrases that our rhetoric would so far obscure stern logic, that the result would be that we would lose the true sense of proportion and that we would deal with the German beasts as though they were civilized human beings, and in order to heal them of the fatal disease and madness which has obsessed them, we forget what is due in the shape of justice to the helpless victims of their hate and rapacity then, indeed, would Christianity and democracy have proven a dismal and pitiable failure.

Like the beautiful notes of the flute and the aeolian harp, some of the words and phrases which have been recently uttered have struck a responsive chord in the humanitarian and civilized hearts of the American people. Let me take one for an example, "A Healing Peace." But let us be very sure what we mean by a "healing peace." Do we mean administering to the German people as a cure for their malady in large and copious doses, a mild Christian soothing syrup in the form of a condonement of their crimes and in such eagerness to bring about peace that we shall say to them "Go thy way and sin no more?"

Or shall we so carefully diagnose the disease that we will see that the only sure and certain cure is the use not of the doctor's potion, but the surgeon's knife, where we will recognize the malady as a virulent cancerous growth which has permeated the blood and the tissue and the very life and soul, not only of the devil begotten and hell-born Hohenzollerns and their co-criminals, the Prussian militarists and junkers, but a large majority of the rank and file of the German people as well?

I have little sympathy with the people whom I constantly hear devising new forms of punishment and torture which shall be visited without stint on the Germans when we have either "licked them to a standstill or received their unconditional surrender," as I would regret to see our country and the Allies who are fighting to make the world a safe place to live in develop a spirit under which we would descend to the level of the German brute.

But, on the other hand, it is my hope that in the

justice to be meted out impartially to friend and foe alike, that from the Kaiser down to the humblest soldier in the German army, including every individual who is responsible for the war, the evidence be carefully prepared and under a military court, made up of trained officers from the Allied armies, that every man guilty of wanton murder, the rape and outrage of the helpless victims of German lust, the wanton destruction of property, and those guilty in the conduct of the war, of the breaches of the rules of civilized warfare, be convicted of their crimes by a just, fair and impartial trial, and when so convicted, punished to the same extent as would be the individual criminal committing like crimes in civil life.

Under no circumstances should the crimes be condoned or viewed in a different light because they were committed with the sanction and under the orders of a beastly and outlawed nation.

When the criminals have thus been dealt with, whether it takes one man, one thousand men or one million men to pay the debt which they owe to an outraged civilization, the remainder of the German people should be made to pay to the last farthing the debt which they owe to civilization for the war which was forced on civilization from motives which are now so clearly understood.

If the negotiations during the next few momentous days result in the cessation of hostilities, instead of taking vengeance on the German nation by the destruction of their cities which they would do to ours, unquestionably, if the situation was reversed, let us rather preserve their property and instead of impoverishing the German people further by the wanton destruction of their homes and their fields, thus lessening their power of production, let us take the fruits of their toil, if need be for a century to come, and use these fruits for the repayment of the damage they have caused the world until the debt is paid to the last farthing.

Let the German army, of which the whole German people were so proud, be put under penal servitude, not under brutal taskmasters, but under military overseers who would see to it that each individual turned out a day's work, and keep them so employed until they had rebuilt and restored as far as it was humanly possible every cathedral, church, palace and home overrun and destroyed by the Kaiser's horde of brutal Huns.

When the last dollar has thus been paid and restitution has been made as far as it is humanly possible, the hearts of the world will still bleed with sorrow for the millions of the noble dead who went singing to their death and gave their lives so freely in the hope that the world shall be forever free from a repetition of the scenes of horror of the last four years.

There is one phase of the horrible nightmare which humanity must bear and for which there will be no relief until time with its healing qualities shall make it far removed from the present thought of the world, and when a merciful forgetfulness may gradually soften and remove the memory, and this is the terrible outrage and indignity heaped upon the helpless womanhood, girlhood and childhood of the helpless captives of the brutal Huns. If there is any compensation whatever, it may be remotely found in the contrast between the manhood of the civilized world in their chivalrous respect for womanhood, where the average man worthy of the name of man stands uncovered in the presence of womanhood, where the tenderest love of his heart goes down with her into the valley and shadow of death in that supreme hour of her motherhood, from which she emerges to bless the home with the sweet buds of childhood, plucked from the garden of the gods.

By contrast with the picture which the German beasts have furnished to the manhood of the civilized

Until Heaven offers Peace to unrepentant Hell, until the Almighty invites Satan to a peace parley and to sit beside Him on the throne and rule the Universe, we would be traitors to civilization and to God Himself to grant peace to an uncrushed, unrepentant, unpunished Germany. Peace for Germany without full punishment would be a premium upon crime and an endorsement of all Germany's fearful shedding of blood. It would moreover prove that we are poltroons and cowards and lack the moral force to punish criminals, if they are criminals of high degree.

Democracy is a failure if it should let royal criminals go unhung or unshot because they are of royal blood, and it would deserve to be destroyed by autocracy.

world for the last four years the lesson will be so clear and impressive that the increased respect for womanhood and tenderness for childhood may somewhat compensate for the sufferings and shame which our stricken sisters, the victims of the brutal Hun have endured, and in this respect they will have given their lives as a vicarious sacrifice for the womanhood and childhood of the future.

Oh, yes, Mr. Editor, let us hope that the peace to come will be a "healing peace," which it will be if the settlement of the war is made justly along the lines which I have tried to indicate, for as sure as the settlement is made on opposite lines, just so sure will the vast sacrifices have been made in vain.

ROBERT J. ANDERSON.

Germany for a Thousand Years Will Be a Pariah Among the Nations.

Editor Manufacturers Record:

Memphis, Tenn., October 29.

There is not a crime in the criminal calendar, from petty larceny to rape, that the people of Germany have not committed. While the sons of German mothers were committing all the crimes known to mortal man, the mothers were spitting in the faces of the prisoners and in the meager food given to them. The mothers of Germany have given birth to the vilest soldiers that ever infested the earth. Base, indeed, must be the nation whose sons have with such alacrity become the wild beasts of the world!

The Allies should take every foot of ground up to the banks of the Rhine and then let these German mothers and fathers keep their Kaiser and rot on the other side of it with him. All governments get the rulers they deserve, churches have the ministers they deserve, municipalities have the mayors they deserve, and Germany deserves the Kaiser, and they should be allowed to wallow in the stench of their own kultur without any interference on the part of the civilized world.

Unconditional surrender on the battlefield, and the laying down of their arms and ammunition on the spot where they surrender should be demanded, and then these hordes should be sent over the Rhine weaponless, there to practice on their own kind the loathsome things they have committed on their superiors in France, Belgium and other parts of Europe.

Unconditional surrender really should be had in Berlin, if it were not pollution to breathe their fetid atmosphere under their own skies. For a thousand years they will be the pariah amongst the nations, and they will stand stripped before the world, their villainess forever on view.

This country should become a unanimous English-speaking nation, and no man should be allowed to become a citizen of the United States who doesn't speak the English language. This will be our only future safeguard for the preservation of the high ideals of America. It ought to be widely known that any man who desires to become a citizen of this great commonwealth will only be admitted provided he speaks the same language that we do, for otherwise we lay ourselves liable to alien enemy attacks where we least expect them.

No lodge or society should be allowed to transact its business in a foreign language; no paper should be allowed to be printed in a foreign language; no community should be allowed to transact its affairs in a foreign language. No minister should be allowed to preach in a foreign language. Everything should be carried on in English, and if foreigners or aliens don't want to comply with that law they are at liberty to stay in the country whose language they speak.

We want no peace with which the Kaiser or any of his entourage have anything to do, for a peace with which they have any connection would be written by the pen of treachery, dipped into the ink of dishonor, on a piece of ill-smelling paper "made in Germany."

HARDWIG PERES.

A University Man Now at the Front Expresses His Views on Peace Without Punishment.

Mayesville, S. C., November 1.

Editor Manufacturers Record:

The following quotation from a letter received today from a young South Carolina officer in France gives some idea of how our soldiers look on the German efforts for peace. This young man is not a fire-eater, but was leader of his university in literary pursuits, and took a post-graduate course at Clarke University in psychology and education to fit himself for missionary work in China. He wrote from a famous French artillery school, where he was taking a course in advanced artillery practice: "This morning's French paper gave the text of an Austrian note, asking for an armistice to discuss peace. 'Hell!' in very disgusted tone is about all I can think to say! They will get an armistice all right, all right—get it in the neck! I am only writing this item of news in order to express my opinion upon it. When you get this letter the news will be old. I look for many developments in the general war situation in the next month. Still, I always keep well in mind the fact that the war will last at least a year longer, and that there is plenty of hard fighting ahead of us. But the Central Powers are certainly beginning to squeal, aren't they? And they ain't even struck yet; that is, compared to what they are going to be. The Germans in 1914 started out to fight a mean war; well, they are going to have just as mean a war as they want, and then some!"

I have quoted at length that your readers may see how our young men who are offering their lives on the altar of liberty—as surely as did our forefathers in '76—regard an inconclusive peace or a peace by agreement. These young men—and my two sons old enough for service are among them—did not give up attractive pursuits in civil life merely for a trip to France. They will not be satisfied until "the world is made safe for democracy." They know, and every man who has any sense ought to know, that the world will not be safe for democracy if such arch fiends as the Germans have shown themselves are allowed to go unpunished.

Convict stripes for every man who wears the German uniform at hard labor under allied guards until every orchard, barn, dwelling and building in France, Belgium and Serbia has been rebuilt—until every mine has been pumped out, every trench filled up, until factories hum with machinery and fields are green with crops, until the cattle that they have stolen and killed for the fun of killing are replaced. Even then they ought to thank their German god that our God puts it into our hearts to be so merciful to them!

On to Berlin!

On to Vienna!

On to Constantinople!!

E. W. DABBS.

An International Court for Giving Germans the Right Kind of Justice.

J. S. Shipley & Co., Cotton.

Greenwood, S. C., October 29.

Editor Manufacturers Record:

We should like to see concerted action among all of the leading newspapers of the allied countries with reference to molding sentiment in favor of bringing before an international court of justice those who were leaders of the Central Powers at the outbreak of the war, together with all officers who issued orders for the violation of women and other outrages on the inhabitants of invaded districts.

We understand many thousands of authenticated cases are in the hands of the French, and it should be a comparatively easy matter to legally impose the death sentence on these monsters and rid the future of their breed. Such a step would set up and serve to warn and deter criminals in subsequent wars when they imagine they can attack society and outrage defenseless people under cover of the army of which they are a part.

We hope you will continue to use your efforts to-

wards this end, and we assure you that a majority of the American people are with you in it. We want to give the Germans justice, and plenty of it.

J. S. CHIPLEY & Co.

Let Our Boys Go to Berlin!

Sessions Loan and Trust Co.

Marietta, Ga., October 28.

Editor Manufacturers Record:

I endorse most heartily all of your editorials against a negotiated peace with the dirty Huns, and I agree with every word in Mr. E. C. Calloway's letter and of that of Mr. W. B. Dickson in your issue of October 24.

Any politician or so-called statesman of any of the Allied nations who is willing to talk peace with and let up on the Beast of Berlin and his crowd ought to go down in history with Benedict Arnold.

If armistice should be given to the despised Huns, our soldiers over there would be justified in rising up with the Allies and marching to Berlin and dictating terms of peace.

I wired President Wilson on October 14 as follows: "For God's sake let Pershing and our boys give our answer to Germany!" Every man and soldier to whom I have shown this message approves it.

If the Kaiser and his advisers are not hung, then capital punishment should be abolished forever.

May God spare your life to keep up this fight for right and justice.

LET OUR BOYS GO TO BERLIN!

Yours for Unconditional Surrender,

MOULTRE M. SESSIONS, President.

Shall We Open Our Doors to German Immigration?

Cincinnati, O., November 2.

Editor Manufacturers Record:

The Unconditional Surrender Club idea is a splendid one, but I wonder if our voice is not going to fall on deaf ears. Judging from the utterances of the men at the helm of our ship of state, "unconditional surrender" is no longer a phrase to be used when victory is within our grasp. However, we can live in the hope that the club will grow to such proportions that our presence will be felt if our voice fails to reach the ears of those who direct the course of these glorious United States.

Would it not be well to also form a League for the Prosecution of the German Criminals (none other than the people themselves) who have so ably assisted the Kaiser and his "vons" in their work of frightfulness and destruction? When peace comes to the world, even though it be preceded by unconditional surrender, are we again going to open our doors to the German immigrant? Is the American manufacturer going to employ the Hun who but a few years before helped to crucify his son on a barn door? Is your neighborhood going to harbor the Hun who held up his hands when in France and cried "Kamerad, Kamerad" only to set off a bomb with his foot as your next-door neighbor's son, perhaps your own, advanced to take him prisoner? Are we going to let come among us the very women "who, in their hatred of all opposed to them and their beloved empire, cursed American soldiers taken prisoners, threw missiles at them and spat in the faces of the manacled men powerless to defend or to resist?"

For the crimes committed by the Huns punishment should be inflicted upon the second and third generation, if only to impress upon them the grievousness of the dastardly crimes committed by their forefathers.

Then why should we not have an embargo on German immigration for the next 50 or 75 years? Perhaps you, being spokesman for the manufacturers of the South as well as our peerless leader in genuine Americanism, can give the answer.

EDW. HARPER.

[Our answer was already in type in an editorial against permitting any German immigration into America and also in several editorials against German-made goods being used in this country.—Editor MANUFACTURERS RECORD.]

Germany May Return to Curse the World as Heretofore if We Fail to Do Our Duty Now.

H. Grosvenor, Ph. D., Consulting Chemist and Factory Engineer.

New York, October 25.

Editor Manufacturers Record:

It is perfectly well recognized that mental training modifies along certain fixed and definite lines the actual physical structure of the brain cells, and over several generations this modification becomes more fixed and is partially cumulative. The Hun has been trained for about two and one-half generations to think and feel in certain directions, and this training has been superimposed upon a strong racial bent which has existed ever since the days of Rome.

It is very much to be doubted whether the majority of the living generation can ever be led to regroove their brain channels so as to think morally straight or even understand what ordinary civilized human beings are talking about. Many of them can, however, provided they are entirely separated from the German civilization and distributed among people who take the other point of view. Your illustration is an excellent one—Mr. William C. Sedgwick's friend of German birth who is now supporting the Hun because he has come to appreciate how Americans would look at his responsibility. Some of them will learn provided they are separated and circulated about among civilized people.

This was the main purpose I had in mind in urging that the Germans be compelled to work for a year or longer in other countries on the reconstruction of what their military system has destroyed. They would be brought in contact with the people of the other countries and led to recognize at least the existence of a different point of view. The removal from Germany for a year of the entire military force would make the selection and return of stolen goods far more easy on the one hand, and would offset the industrial handicap which the German army has tried so successfully to lay upon France and Belgium by destruction of all the mines and factories. In other words, Germany would not be able to go to work reconstructing herself until after her men had fixed up and started the factories in the countries she has devastated. Also the people left in Germany would have a better chance to think it all over and take a fresh start as the men return with their new ideas gathered while in reconstruction service abroad. Many of them would probably not return at all, and during this period there would be a heavy infiltration of foreign male labor into Germany. Furthermore, the plan would provide that all the officers (men of permanent military occupation) would be held for much longer periods in foreign service so that the military organization as such would be practically be disintegrated for a number of years. Finally the foreign education of the children, like that of the adult males while in foreign countries, would be directed by lectures, by the way in which history was taught, by comparison and by example in entirely new channels of unselfishness and world citizenship.

In contradiction to this the ordinary form of peace settlement by mere deprivation of territory and money indemnity would leave the German people a co-ordinated danger for war as they stand today, would foster military reconstruction by leaving among them the men whose life and ambition and sole occupation had in the past been military, would leave the entire male population to re-coordinate German industries far in advance of the devastated industries in France and Belgium as well as the converted industries in the United States, England and Italy, and would leave in the hands of the German people as reminders of a successful looting expedition all the things they have stolen from the territory overrun. The payment of indemnity thereafter would then fall upon the German people as a burden of taxation that will certainly be made by the dominating classes to fall most heavily upon the ignorant classes and used by the dominating classes as a basis of argument for reconsolidation and reconstruction of German power. They would teach the people to look forward to the first opportunity of starting another war and not merely wiping off the unpaid indemnities, but reimbursing themselves many times over for that portion of the indemnity which had already been paid.

Depriving Germany of her colonies as well as of all conquered territory and the portion of Poland which

was acquired before the war opened will, of course, be essential to reduce her population and industrial advantages to where they legitimately belong, to say nothing of justice to Poland or stability of Europe. The same, of course, is true of Austria as regards the separation from Hungary and the territory formerly Italian, but all of these I have taken as matters of course.

The things which seem to me essential, however, are:

First—The reconstruction—the actual physical reconstruction by training as well as emotional contact by defeat—of the German mind. To accomplish this:

(a) Military occupation by the Allied armies must be the first step.

(b) Exhaustive restoration of looted booty must be the second.

(c) A prolonged employment in personal restoration of the damage they have done the third step, and

(d) Continued individual education and contact with different minds, the fourth and only final step.

Second—The other essential is counterbalancing of the enormous industrial handicap under which Germany will hold other nations as the result:

(a) Of destruction brought, particularly in France, Belgium, Serbia, Rumania and Russia.

(b) Of the enormous extent to which the world's industrial equipment has been converted or worn out in the usages of war, a handicap which amounts to industrially winning the objects of the war even if territorially and militarily defeated.

Indemnity must be paid in some form. On that we all agree. The only question is whether it shall be paid in days' labor extended over years and made profitable as an education, as a setback to German industry and as a disintegration of the German military force, or whether it shall be paid in money only and serve to consolidate the racial hatred.

What we have got to do is to regroove the natural thinking channels of the German race or else the Hun will come back just as he came back after the original conquest of middle Europe and conquered Rome; just as he came back after the ejection from the territory that is now Alsace-Lorraine; just as he has now come back with larger ideals of conquest, so he will come back again. The Turk and the German are racially united at the root and perfectly unified today in their conception of proper treatment of subordinated peoples and their own colossal sense of individual superiority over all other races. Drive this into the American mind, and make it clear to our Allies, because this is the real beast that we are fighting, and the recrudescence of which we must try to spare civilization for all time. Cordially yours,

W. M. GROSVENOR.

Shall We Trust a Tiger?

[Fort Myers (Fla.) Press.]

Secretary of State Lansing in a recent address said: "I shall not attempt to enter upon a recital of the horrible brutalities perpetrated by the German armies in the prosecution of the war. They have been too often told to require repetition. It would be the needless reading of a catalogue of black deeds of cruelty which would sicken a tiger."

The tiger, it will be remembered, "glories" in blood, which he delights to drink until he can hold no more. And yet it is such as these that ask for an honorable peace.

The MANUFACTURERS RECORD of Baltimore sums up the situation in fine style in these words: "Until Heaven and hell are synonymous terms, until Almighty God invites Satan to sit beside him on the Throne of the Universe, and becomes a co-ruler, until God ceases to punish sin and welcomes the unrepentant, black-hearted criminal into association with the redeemed Angels of Heaven, there should be no thought of peace with German criminals except the peace of punishment, commensurate as far as human power can make it, upon the sins of these criminals whose crimes Secretary Lansing so strongly said would 'sicken a tiger' to recount."

Declaring that Germany cannot be trusted, and that the cry for peace is not the cry of a broken and crushed and repentant nation, the MANUFACTURERS RECORD says: "It is merely the cringing, cowardly effort of a nation of murderers and looters to follow the teachings which for 150 years have ruled Prussian diplomacy," citing Secretary Lansing's statement that America need not be surprised at "the spirit of hypocrisy and bad

faith manifesting an entire lack of conscience which prevails in the German Government, for the policy of German diplomacy for 150 years has been based on the immoral principle announced with cynical frankness by Frederick the Great: 'If there is anything to be gained by it, we will be honest. If deception is necessary, let us be cheats.'"

And now they ask us to believe that constitutional changes have given them a government by the people, to which even the military powers are subject. And they farther ask that there be no approval of any demands incompatible with the honor of the German people. Well, there won't. In fact, no terms could be imposed, however severe, which would be sufficient punishment to those worse-than-tigers.

"Of What Interest Is It to the Allies What the German Cutthroats Want?"

National Association Printing Ink Makers, Inc.

New York, October 29.

Editor Manufacturers Record:

I wish every he-man in America could have your editorial pages laid by his plate every morning! No matter how many times he had previously read them, he could get new inspiration and new determination with every reading to "see it through."

Your telegram to President Wilson is pregnant with the red blood of dispassionate reasons why we should snap the cover on the typewriters and snap the shells into the guts of the bastards until the swine are groveling in their own filth and squealing "Peace, Peace, any old Peace!"

To Hell with the Huns! Of what interest is it to the Allies what the German cutthroats want, or think, or wish to do? Their "place in the sun" is forever gone. Their place is in the foulness and fetid quarters of a diminished German territory—an impregnable "Chinese wall" of world hatred, contumely, isolation and distrust built around them until they have so fed on German Kultur, have so deteriorated by cross-breeding, so rotted by their slime of illegitimacy that they efface themselves from the universe of human kind, leaving the soil manured and fertilized by their unworthy carcasses so that enlightened, free men, humans in mind and body, may cultivate it to raise food and raiment, and to create homes for a decent, honorable and peace-loving race, bred by the sons and daughters of an eternal God who never created the Hun in any likeness and image of Himself.

Go on! Your editorials should be heralded and thundered around the world until there be none so blind they cannot read or so deaf they cannot hear!

I am enclosing my feeble attempt to outline the necessary 14 articles of unconditional surrender to be swallowed whole, lock, cock, stock and barrel, by the Huns.

DAVID E. GOE.

P. S.—My own son is "somewhere" in France with his battery of 16-inch railway guns, and I know he is doing his level best to help exterminate the rats.

Fourteen Articles of Unconditional Surrender.

While we are debating in our minds the details of punishment to be meted to the unspeakable Huns, we must not forget long past and overdue accounts against them.

First—The Germans must return Alsace-Lorraine, and pay for all the natural resources of every kind that they have stolen during their occupancy of that territory.

Second—They must return to France the huge "indemnity" of which they robbed her in 1870. This must be returned with compound interest at the rate of 10 per cent.

Third—And highly important, before any "terms" are laid down, Germany must lift the veil on the vast blot of infamy which she has smeared over the sea and over the soil of Belgium and of France and of all other allied countries. She must lay bare to the world the tale of her fiendish and hellish atrocities. Witnesses must be summoned to help paint the picture of bloody bestiality, of the murders, of the torture of men, of the rape and ravage of women and girls, of the bayonetting of babies. Lift the veil and let the world view, in all its chilling, blood-curdling horror, the results of German KULTUR! For every murder, for every baby, for every ravished woman and girl, for every brutally maimed and crippled man, woman or child, non-combatant, the Germans must pay to the victims or to the next of kin \$100,000 EACH.

Fourth—Before any "terms" are arranged, Germany

must produce every single man, woman and child that they have carried into slavery and to a hell worse than slavery. For those they cannot produce they must give a proven record of what their ungodly fate was. **For every soul, dead or alive, that they deported, or held in slavery, they must pay to the victims, or to the next of kin, \$100,000 EACH.**

Fifth—For every "war-baby" born to a French, Belgian, Russian, Italian, or woman of any allied nationality, fathered by a bastard HUN, Germany must pay to the mother, or, if she did not survive the infamous outrage, to her next of kin, \$100,000.

Sixth—For every allied "casualty," whether dead or maimed, they must pay to the victims, or to the next of kin, \$50,000. For every authenticated case of torture, or of treatment of any kind contrary to the rules of civilized warfare, they are to pay to the victims, or to the next of kin, \$100,000.

Seventh—Germany must pay to the Allies every cent of the cost of the war, payable \$25,000,000,000 cash, balance in monthly payments, bearing 10 per cent. interest. For every dollar exacted from French and Belgium territory she must restore fivefold, with interest at 10 per cent.

Eighth—German labor, including a chain gang of the Kaiser, his entire family, and all of the German military gang, must be forced at the point of the bayonet and by the lash and scourge of the knout to tear down German towns, temples, roads and railways and with that material rebuild the wrecked and devastated territories of all the Allied nations. Household goods, art treasures, moneys and personal property, value for value, an eye for an eye, a tooth for a tooth, must be taken from German homes and towns and by their own enforced labor transported and restored to the owners.

Ninth—On top of all this they must pay \$100,000,000,000 to France and Belgium at the rate of \$1,000,000,000 each year till all is paid, the deferred payments to draw 10 per cent. interest.

Tenth—It must be made a capital crime, punishable with death without trial, for a German anywhere in the world to be caught with any weapon of any description more dangerous than a one-bladed dull Barlow knife.

Eleventh—No German of any age, sex or rank to be permitted to emigrate from Germany, or to visit or to leave what may be left of German territory, on any pretext whatever, for a period covering 50 years. Every German now in any country or dependency of the Allies to be given the choice of either immediately renouncing all allegiance to Germany and becoming naturalized citizens of the country where located, or of being immediately deported to Germany.

Twelfth—No goods of any description "made in Germany" to be permitted or sold in any country of the Allies without being distinctly marked, labeled or branded "Made by Huns," and no store, person, firm or corporation to be allowed to hold, store or offer for sale, trade or barter any goods of any description made by Germans without displaying in a prominent place over the front door of their establishment or office, or other place of business, a distinctly legible sign 2x20 feet, with letters not less than 15 inches high, reading "WE SELL GERMAN-MADE GOODS."

Thirteenth—Germany must not be permitted ever to again establish colonies or bases of any size or character anywhere on earth.

Fourteenth—America to cancel every penny of indebtedness due to war loans or owing for war munitions owed to the United States by either England, France, Italy or Belgium previous to the date of our entry into the war, and at that we will be getting off dirt cheap. They did our fighting and dying for us for three hellish years.

If this means perpetual slavery for Germany, then that's what it means!

Shall We Not Prevent German Immigration After the War?

Rosser, Slaton, Phillips & Hopkins.

Atlanta, Ga., October 26.

Editor Manufacturers Record:

I have been reading the MANUFACTURERS RECORD and have for some years been a regular subscriber.

Because of the views you express I write to ask if you do not think it wise to initiate at this time legislation which will prevent the immigration of Germans to the United States after the conclusion of the war. It seems to me that the atrocities they have committed

and the immoral degeneracy they have displayed as a nation demonstrate their unfitness to enter into this country and participate in the management of the Government. Certainly time and proper training alone can cleanse their hearts and natures of their bestiality, and until they have displayed a regenerated spirit they should not be permitted to enjoy the rights of citizenship with us. I have not seen any movement along this line. Educational qualifications will not exclude them.

In addition they ought to be made to pay full compensation in so far as money can pay it for the damage they have done, and it seems to me they should be forced to remain within the confines of Germany to labor there until their toil shall have made approximate reparation.

In their orgy of crime they have not anticipated the day of reckoning, but the world should receive the benefit of the object-lesson of their payment to the uttermost penny for their wrongdoing and no piling sentiment should be allowed to interfere with the strong hand of justice.

When the demand is made for reparation I anticipate they will seek other lands to escape the burdens of their iniquities, and this should be forbidden.

There may be diplomatic reasons to interfere, of which I have not thought. JOHN M. SLATON.

We Would Gladly Do So if We Could.

[Telegram to Manufacturers Record.]

Bluefield, W. Va., November 1.

I note from the papers this morning that Bernstorff has been recalled to Berlin on account of his familiarity with American affairs. Because of this familiarity, which was treason to the best people on earth, won't you use your good offices with General Allenby and have him stopped before he reaches the Rhine and send him to America for execution?

JAMES EMMETT JONES.

Train Dispatcher Norfolk & Western Railroad.

Punishment But Not Vengeance.

[Columbus (Ga.) Enquirer-Sun.]

Than Richard H. Edmonds, editor of the MANUFACTURERS' RECORD, there is no more thoroughly patriotic citizen of the United States. His every word and his every act are so entirely American as to mark him as one of the great leaders of thought and moulders of opinion of the present day.

This is pre-eminently true in so far as the present great war is concerned. Mr. Edmonds is not a man who would do injustice to anyone, but he would mete out full and complete justice to Germany and would be content with nothing less. This has been indicated many times in articles appearing in the RECORD, and is abundantly set forth in the following editorial article from a recent issue of that publication, one of the most patriotic in the United States:

"Until Heaven offers peace to hell, until the Almighty invites Satan to a peace parley and to sit beside Him on the throne and rule the universe, we would be traitors to civilization and to God Himself to grant peace to an uncrushed, unrepentant and unpunished Germany. Peace for Germany without full punishment would be a premium upon crime and an endorsement of all Germany's fearful shedding of blood. It would, moreover, prove that we are poltroons and cowards and lack the moral force to punish criminals if they are criminals of high degree.

"Democracy is a failure if it should let royal criminals go unhung or unshot because they are of royal blood, and it would deserve to be destroyed by autocracy."

If, as has been said, "the punishment of individual criminals is necessary for the protection and orderly direction of society, it is equally necessary that criminal nations be punished for the same purpose." This is too true to admit of discussion. The danger from the individual is infinitesimal when compared with that from a nation, and, therefore, it is all the more important that such criminal nations—such as Germany—should be punished.

But some may say that "vengeance is Mine, I will repay" saith the Lord." And so it is, but the meting out of just and deserved punishment is not vengeance. It is protection of innocent persons against injustice

and imposition. Governments are instituted among men to secure this protection, and laws are enacted providing certain penalties for their violation.

The laws of nations are but an enlargement of the idea, and when any nation violates these laws, as Germany has repeatedly done, such nation should be dealt with in a no less vigorous and firm manner than governments deal with their citizens or subjects.

If a man commit a murder he is tried under the law of the land and punished accordingly. It is not a question of vengeance. The law seeks not vengeance but merely to punish in order to protect and deter others. The full and complete punishment of Germany for the great wrongs she has committed will be in the nature of her victims wreaking vengeance but of inflicting punishment to the end that protection may be guaranteed in the future by deterring the nations from pursuing a course similar to that pursued by Germany.

Germany's punishment must be sure and certain. Vengeance will be left to the Lord of hosts.

Tell the Kaiser.

From a leaflet issued by the Reading Chain Block Co., Reading, Pa.

Germany wants to know what the United States is fighting for. She thinks the sinking of neutral ships without warning isn't enough to bring us in.

All right! Let's show her!

We are fighting for outraged women!

We are fighting for crucified nuns!

We are fighting for little children with hands and arms missing!

We are fighting for namelessly mutilated soldiers!

We are fighting for innocent thousands strewn upon the bottom of the seas!

We are fighting for Belgium—outraged and decimated as no nation in the previous history of the world has ever been!

We are fighting for France—that magnificent nation of heroes—bled white defending civilization against the Power of the Beast!

We are fighting for England—which chose the path of honor black-tinted with despair—when the little nation she had sworn to defend was set upon as by a wild beast!

We are fighting for Italy—which took up the cause of Right against the power of Wrong—terrible though she knew the cost must be!

We are fighting in defense of those principles of human liberty which were laid down nineteen centuries ago by the first great teacher and preacher of human rights—the MAN of GALILEE! Every iota of the philosophy and creed of HATE, and BLOOD, and VIOLENCE, and BESTIALITY, and diabolical CRUELTY, and human ENSLAVEMENT that mark every footstep of the Kaiser and his cohorts of Hell is indirect and damnable opposition to every thought, word and deed of the MAN of GALILEE!

This is, therefore, no fight of DEMOCRACY against AUTOCRACY!

It is no battle of NATION against NATION!

It is no contest of MAN against MAN!

It is a titanic struggle between RIGHT and WRONG; between the philosophy of JESUS CHRIST and the powers of EVIL, through the earthly defenders of each!

And we're going to FIGHT—FIGHT—FIGHT side by side with our fellows in the cause of HUMANITY until there is no vestige left on all this great earth of the powers that—defying God and man—precipitated this cataclysm of blood and tears!

There is only one sentiment in this whole broad land today, and the man who does not recognize it must indeed be deaf, dumb and blind; and that sentiment is a dogged determination deep down in the very heart of every man THAT WE ARE GOING TO FIGHT UNTIL WE HAVE JUSTIFIED ITALY; HELPED ENGLAND; SWEPT IMMORTAL FRANCE FREE OF THE HUN; LIBERATED BELGIUM; AVENGED SO FAR AS IS WITHIN HUMAN POWER THE COUNTLESS CRIMES OF GERMANY AGAINST CIVILIZATION; BROKEN THE ARMS OF THE HINDENBURG LINE AND SWEPT THE ARMS OF THE BEAST AS CHAFF BEFORE THE WIND; HUMBLING THE EMPIRE OF HELL AND—PLEASE GOD—RID THE EARTH OF THE KAISER AND ALL HIS FOUL BREED!

If anyone asks you, tell them THAT is what we are fighting for!

"On to Berlin!" Is His Demand.

Palmetto, Fla., October 31.

Editor Manufacturers Record:

I have just read a reprint of 16 pages of your valuable paper of October 10 giving some of the facts concerning our war with the beasts of Berlin, and wish to commend the same. If the leading papers, business men, Congressmen, Senators and all other leaders of thought and action in this United States of ours had been 100 per cent. American, with the courage of their convictions that you have had, with the same forethought and business acumen that they have used in garnering to themselves a few extra dollars in this profiteering game that has threatened from time to time to overthrow the greatest enterprise the world has ever known, and in which the greatest number of people are now engaged, or ever were engaged in one single work, conditions would have been different today.

When leading Metropolitan papers like the New York Times will go out of their way to suggest and almost insist that the President enter into peace negotiations with such vandals and criminals as the Kaiser and his cabinet, when the best blood and brawn of this country are daily offering up their lives as a sacrifice to the Noble God of virtue and justice to all men, the greater is the need that we must speak out, and in terms that cannot be misunderstood.

Some leading writers have urged destruction in Germany for every city destroyed in France, Belgium, Serbia, Roumania, Italy and Russia. "Vengeance is mine, I will repay" (Romans XII, 19), is as applicable today as it was when that learned apostle of Christ delivered the famous epistle to the Romans, at that time the leading nation of the world. But I believe Germany and all her red-handed associates should pay the last farthing of all the war debts, the rebuilding of the devastated cities, the pensioning of all the war widows and orphans and disabled soldiers. I believe that every part and parcel of the German Empire should bear its share, and that the same rule that Germany laid down to France some 50 years ago should be applied.

The peace proposal of the Kaiser is ill-timed and comes with poor grace, and the milk of human kindness that has lately sprung from his breast smells too much of sulphur and looks too much like ink to appeal to the average American mind or taste.

There should be a million rubber stamps made and used on all letters sent out using these words: "ON TO BERLIN!"

Yours in the cause of right.

JOHN W. JACKSON.

"Leave Peace Terms to Belgian Women."

901 Florida Avenue,

Tampa, Fla., November 1.

Editor Manufacturers Record:

You are my kind of a man! But you and your writings will ruin me yet. You are in my mind so much that I can't do justice to my business.

What it takes to tell it to them, straight from the shoulder, "you have got."

I appreciate you and your writings more than I can tell you. Just remember that you have one Florida Cracker that sings your praises.

I am now wearing a black eye over you. The other fellow has got—oh, well, after the fight he says that man Edmonds must be "some man."

I read every copy and cry for more. Just keep knocking at the door. "He" will be compelled to open, and when he does open it he will find you there saying, Unconditional Surrender, Mr. President.

I would leave it to the Belgian women to dictate peace terms to the hogs.

L. R. MOORE.

New Pipe Line to Serve Mexican Field.

Tampico, Mexico, October 22—[Special.]—Another leading station and seagoing oil-pipe line will be installed at Port Lobos by the Cortex Oil Corporation as soon as it finishes laying the new 10-inch pipe line from the Tepetate field to that port, it is announced. The company has received shipments aggregating 39,000 feet of 10-inch pipe for the proposed line. When this additional pipe line is placed in operation the movement of oil through Port Lobos will be materially increased. The company will operate a six-inch natural gas line to the new port. The water for its Port Lobos terminal is obtained from the Toncochin River through a 20-mile four-inch pipe line.

Iron and Coal Interests in Birmingham District

Birmingham, Ala., November 4—[Special.]—Raw material shortage holds down the pig-iron production in the Birmingham district, and there is hardly any telling when a change for the better is likely to come on. Even limestone and dolomite are yet scarcer, and while the influenza epidemic was responsible during the past three weeks and longer for the greater portion of the trouble, the general labor situation might be charged with the conditions. Ore, coal, coke, as well as limestone and dolomite, are short—every material that goes into the making of pig-iron. In some instances inferior products, too, are proving costly, and the output is being hindered thereby. The Talladega furnace, being operated by Japanese interests, has had to bank fires because of raw material shortage. The Republic Iron & Steel Co. will make no effort to start its third furnace until there is a better supply of raw material. The same can be said of the Sloss-Sheffield Steel & Iron Co. and the Alabama Company, each with a furnace ready for the torch. The Woodward Iron Co. is rushing repairs on the Vanderbilt furnace. The accumulated iron is rapidly disappearing, and within another two weeks it is estimated that the tonnage on hand, with the exception of about 5500 tons of the Tennessee Coal, Iron & Railroad Co., basic and foundry iron, will be the lowest in this district in a long time. One of the active companies of the district reports about 700 tons of iron on hand, 300 tons being loaded right now for the Government and 400 tons being loaded on orders in hand. By the end of the week, it is stated, the furnace yards could be planted with wheat or anything else, so barren will they be.

Allocations recently have lagged a little, but the books of furnace companies in this district are so well laden that it is not believed there will be any relief for months to come, which will carry present business in hand through Government sources beyond the first quarter of the coming year. A report has gained some ground that a little tonnage was disposed of to stove makers recently by Southern furnace companies, but there is no acknowledgment. But little iron is being sold without Government sanction, so far as can be learned, and the reports of the purchase of iron by stove makers of the Middle West aroused some interest, and inquiry has been made on the score.

Birmingham iron manufacturers are keeping in close touch with the War Industries Board, and there will be representation at all meetings or conferences wherein discussion will be had as to a steady committee to co-operate with the Government on iron and steel distribution. While the American Iron and Steel Institute has been looking after the interests of all iron and steel manufacturers with the Government boards heretofore, the intentions, it is learned, are to have representative commissions to co-operate with the War Industries Board on the distribution of iron and steel in the future.

The influenza epidemic having passed over, there is a return to labor in the coal fields of Alabama, and the production is beginning to make appreciable gains. The output at mines in this State went down to the lowest mark for the week ending October 26, the representative of the Federal Fuel Administration in this district reporting 310,041 tons of coal mined. For the week ending October 5 the production in this State was 409,022 tons, the next week 382,846, the week ending October 19 just 323,310 tons, the epidemic having extensive effect. The Railroad Administration officials in this district are providing plenty of cars to care for the coal traffic as the improvement in general conditions are taken up. A. H. Carpenter, the assistant to the production manager in the coal fields of Alabama, to be in special charge of the coke output, has been on tour to the coke ovens of the State and now is prepared to bring about effective co-operation between operators and operatives and a distribution along essential lines. The effort to bring about cleaner and more coke promises to have effect.

Considerable good feeling obtains in the district over the announcement of Dr. G. A. Tomlinson, assistant to the Director-General of the United States Railroad Administration, in charge of inland waterways, that there would be recommendations for extensive development on the Warrior River in the way of equipment for handling a big traffic, the establishment of terminals, etc. No time is to be lost in pushing the work after the recommendations have been made and accepted and appropriations made. Dr. Tomlinson was outspoken in his commendations of the possibilities of the Warrior River and with the improvements by the Government.

No new business is being announced by the old-material dealers, though the market is showing weakness, and several commodities are quoted at from \$1 to \$2 off this week. A number of contracts in hand will be filled right along, and yards will be depleted within a short while. At present prices, it is asserted, the scrap iron and steel dealers cannot afford to seek much new business, if any at all. Peace talk is given as one of the causes for the weakness in the market. Consumers of scrap iron and steel in the Birmingham territory, including Alabama, Florida, Georgia and Mississippi, are not willing to enter the market, expecting some material changes with cessation of hostilities in Europe probable. With the war over, it is believed here that not less than six months will be necessary to bring about normal conditions again, the readjustment of the quotations and a settlement of market conditions to take time. Labor will present a new front. Kindred lines will give in to some extent, it is believed, and concerns which use scrap to a considerable extent will hold off until they find where they stand. The influenza epidemic was felt for three weeks and longer in this section by the scrap dealers, their yard forces as well as others being affected. Women are still to be seen working on the scrap yards assorting the lighter stuff, but the weather conditions will soon run this labor to the indoors. Country scrap is not being gathered as extensively as a short time before this, as the prices offered are not as strong as they have been. But little difficulty is being experienced in getting railroad cars with which to make deliveries. The little rolling mill in the Birmingham city limits, working on bar iron, still has a good supply of wrought on hand, and the statement is made that supply for some time ahead is visible.

Quotations on pig iron and steel in this district are as follows:

PIG-IRON.

No. 2 foundry, \$31.00, f. o. b. furnaces, Birmingham basing point. Differentials as to silicon same as before. Basic iron, \$33.00. Next revision of iron prices to be announced before January 1, 1919.

OLD MATERIAL.

Old steel axes.....	\$38.00 to \$40.00
Old steel rails.....	28.00 to 29.00
Heavy melting steel.....	25.00 to 26.00
No. 1 R. R. wrought.....	29.00 to 30.00
No. 1 cast.....	28.00 to 29.00
Stove plate.....	25.00 to 26.00
Old car wheels.....	29.00 to 30.00
Old tramcar wheels.....	27.00 to 29.00
Machine shop turnings.....	16.00 to 17.50
Cast-iron borings.....	17.00 to 19.00

"Unconditional Surrender" the Only Words in Our Language the Hun Can Understand.

S. H. Bolinger & Co.,

Manufacturers of High Grade Yellow Pine Lumber.

Shreveport, La., October 20.

Editor Manufacturers Record:

Your paper to me seems to be entirely on the correct lines and the argument on the war situation so forceful that I want some of my friends to read it, at least one copy. Kindly mail a copy of the latest edition to the list enclosed and send the bill to me.

During the fourth Liberty loan our company and many others closed letters with "Yours for the Fourth Liberty Loan." Now, since that is successfully over, should use the slogan suggested in your paper, "On to Berlin and Unconditional Surrender," and wish it could be made unanimous in this country as I am sure it is with our boys and the Allies "over there."

For four long and bloody years the blood-thirsty Hun did not think of an armistice nor justice. This seems to be an after thought, and after the Allies forced them to change the precise goose-stepper to the turkey-trotter. Thank the good Lord and the Allies for this!

Justice is practically an impossibility. If the entire Central Powers devoted every effort for a thousand years they could not fully repay the debt they owe. Only by the Allied troops in charge of the principal cities, of the navy and of the coal, iron and oil fields and munition plants can it be arranged for only partial justice to the Allied nations.

Unconditional Surrender are the only words in our language that the Hun can understand, and that only when fully backed up by the Allied troops in ample numbers to make an impression. As much as we all love peace and prosperity, the settlement should be made complete, and not compromised. This alone can justify the blood and sacrifice already made.

On to Berlin and Unconditional Surrender!

S. H. BOLINGER, President.

P. S.—We pass our copy around each issue.

HEAVY SHIP CONSTRUCTION.

Baltimore District Breaks Record With 400,000 Tons of Ships.

Baltimore and nearby shipyards are busily engaged filling contracts for more than 400,000 tons of steel and wooden ships, and now that winter is drawing near the work is proceeding with increased vigor. Indications point to a shattering of all previous records in shipbuilding at the port. Improvements are being rushed at the Bethlehem Shipbuilding Corporation, Ltd., at Sparrows Point, Md., and at the Union Shipbuilding Co., Fairfield, while the other yards are making improvements and additions of less magnitude and focusing their attention on completing ships.

The Bethlehem plant has launched this year 10 vessels, totaling 91,500 tons, and before the year closes at least four additional ships will leave the ways, making a total tonnage launched of 128,850 tons. Up to this time eight ships have been completed and delivered, and 13 will be the total for the year, with a total tonnage of 118,750 delivered. At present there are seven ships on the ways, and the parts of others are in rapid construction in the shops.

About the fifteenth of next month the first new way at the plant will be completed, and thereafter two more will be completed at intervals of one month. This will make a total of 10 ways for the yard, which will take care of ships of from 5000 to about 15,000 tons. In addition, considerable improvements are being added to make room for fabricating and laying out the new ships. The addition to the fabricating shop is of steel frame, brick sides and steel sash, having a concrete foundation and wood roof. A new shop is under construction to house the electrical department. A restaurant to accommodate 850 people and a new office building, both of frame construction, have been erected during the past few months. The Aberthaw Construction Co. of Boston, Mass., is the general contractor for the new work.

Early in 1919 a 20,000-ton floating dry dock will be completed and placed in operation. Work on this dry dock has been progressing over a period of more than a year, and it will enable the company to take care of repair work on the largest type of boats.

Improvements will be added throughout the year to the various units of the plant, making it one of the most modern and best equipped plants in the country. By December 31 it is hoped to have 12,000 men on the payrolls, which will enable a daily working force of 10,000 men. The supply of labor, both skilled and unskilled, is very scarce, say officials of the company, and this is hindering to quite a degree.

The Coastwise Shipbuilding Co., at the foot of Andre street, Baltimore, has made quite a record in the completion of wooden barges and seagoing schooners, having launched nine vessels since the first keel was laid in the fall of 1916, six of 1700 tons dead weight capacity and three of 1300 tons. A tenth barge is now fast nearing completion, which when finished will fulfill an order for that number from the Philadelphia & Reading Transportation Line of Philadelphia, Pa. By the first of next month it is hoped to have a large 1700-ton seagoing barge ready for launching. This vessel is being built for the Cook-Cummer Steamship Co. of Philadelphia. The company has six ways, all of which are continually occupied, about 200 men being engaged in the work, but an additional 100 men is needed.

The company has just been awarded a contract for five barges of 2500 tons each from the Emergency Fleet Corporation, and three keels have been laid for them. Lumber for frame construction is now arriving, and it is expected to rush the work on this contract in record time. To take care of the new work, extensive additions were added during the past year.

The Tuckahoe, a vessel of 1350 tons, launched recently at the plant, is one of the largest wooden vessels to be turned out in Baltimore since the war started. It took seven months to build her, but when she left the ways she was complete in every detail. Her engines, deck rigging and all auxiliary equipment had been installed.

Another wooden shipbuilding yard that is making rapid progress is that of H. E. Crook Company, Inc., adjoining the Coastwise plant. Two barges of 1500 tons capacity each have been completed and delivered this year. The company is now working on a contract for three 2500-ton three-masted schooner barges for the Emergency Fleet Corporation, the keels of which are now being laid. These boats are to be completed in the spring of 1919. From 200 to 300 men will be employed in the new work.

During the past few months a complete joiner shop was constructed, and additional machinery, including air compressors, band saws and miscellaneous automatic tools, are being installed.

The yard will also install the complete mechanical equipment of eight large seagoing type tugs being built for the Emergency Fleet Corporation by M. M. Davis & Sons of Solomon's Island, Md. The installation of this mechanical equipment will consist of engines, boilers, pumps, heaters, all piping, stacks, uptakes and heating, plumbing and wiring systems. The first tug is scheduled to arrive at the plant this month.

The Chas. L. Rohde & Sons Company at Canton is fulfilling a number of contracts for lighters and barges of wood, having completed extensive additions and improvements last year. Five large lighters for the United States Navy have already been turned out, each 110 feet long, 28 feet beam and 8½ feet deep. Just recently the plant laid the keel for a large bay freight-carrying barge for the Eastern Transportation Co. The barge is 208 feet long, 23.10 beam and 13 feet depth of hold. The company has turned out quite a number of lighters for other interests during the year.

At Sollers Point the new plant of the Maryland Shipbuilding Co. is now in full operation. The first ship completed at the plant left the ways this month, and three others are fast nearing completion. The company has a contract for six vessels from the Emergency Fleet Corporation. The plant has four ways. It covers a tract of about 50 acres and has an excellent water frontage. Thousands of feet of lumber for every part are on hand. Last year work was delayed because of lack of timber, but now that this has been remedied, work is proceeding at record speed. The plant is one of the most complete and largest wooden shipbuilding plants in this section, and will employ about 750 men when in full operation. Although the plant proper has been completed and all necessary equipment installed, additional buildings are being erected. This plant was started only in June of last year, and it has established quite a record for itself.

The vessels being built are of the Ferris type, and of about 3500 tons dead weight, and the four ways will be kept continually in use. To take care of the workmen at the plant the United Railways Co. of Baltimore has made a special spur line into the grounds from the Sparrows Point line.

Beaumont's Dry Dock and Marine Railway to Be of Larger Capacity.

Beaumont, Tex., November 2—[Special.]—Of the 12 marine railways which the Emergency Fleet Corporation authorized to be constructed several months ago, the first to be finished is that of the Beaumont Dry Dock & Shipbuilding Co. at Beaumont. It was built at a cost of \$135,000. It is stated that when the dry dock which this company is building is finished the combined plant of dry dock and marine railway will be ample to take care of all wooden ships that may be built west of the Mississippi River. The dry dock will cost approximately \$600,000.

It is stated by J. W. Link, president of the Beaumont Dry Dock & Shipbuilding Co., that the marine railway and dry dock will be operated day and night. While preference will be given to vessels of the Emergency Fleet Corporation, the marine railway and dry dock will also be devoted to other vessels as much as possible.

The Beaumont Dry Dock & Shipbuilding Co. now has six vessels on the ways, and operations are being conducted at their normal capacity.

Barges and Schooners Under Construction at Crisfield.

The Crisfield Shipbuilding Co. at Crisfield, organized last July, has contracts for five motor tugs for the United States War Department and two schooner barges for the Emergency Fleet Corporation, work on which is well under way. The tugs are 64 feet long and 16 feet beam, and are to be equipped with 123 horse-power Winton engines using oil for fuel. The schooner barges are to be 220 feet long, 240 feet over all, 38 feet beam and 20½ feet molded depth, and when loaded will draw 18 feet of water and will carry 2500 tons dead weight. These boats will be schooner-rigged, with three masts, and will be equipped with steam windlass and capstan.

The officers of the company are: James B. Tawes, president; B. F. Gibson, vice-president; J. Millard Tawes, secretary-treasurer; L. J. Nilson, general manager.

What One Baltimore Shipyard Is Doing.

The Baltimore Dry Dock & Shipbuilding Co. is building ships of various kinds at three separate plants, two established plants and a third completed in March. In addition, an enormous amount of repair work on vessels of the largest type is being undertaken. The new plant, which is one of the most modern and efficient in the country, cost more than \$4,000,000 and is located on the south side of Fort avenue and west of old Fort McHenry, and the other plants are located on the north side of the avenue and on Key Highway respectively. There are two dry docks to take care of vessels up to 610 feet in length.

There are now eight ships under construction. Hulls No. 89 and No. 91 at the lower yard, the keels of which were laid on June 20 and September 25, respectively; hulls No. 47 and No. 48, the keels of which were laid on June 15 and August 12, respectively, at the upper yard; and at the South plant hull No. 98, keel laid January 27, 1918; hull No. 99, keel laid February 16, 1918; hull No. 100, keel laid July 18, 1918, and hull No. 101, keel laid September 25, 1918. Hulls No. 89 and No. 91 are cargo carriers of 6200 tons each, and will probably be launched on November 8 and December 28, respectively. Hulls No. 47 and No. 48 are mine sweepers of about 700 tons each, and will leave the ways on December 7, 1918, and January 4, 1919. The boats at the South plant are cargo carriers of 8800 tons each, and No. 98 will be launched on November 23, and No. 99 and No. 100 will be launched on December 14 and 28, respectively, while No. 101 will probably leave the ways on January 25, 1919.

The number of boats launched during 1918 and the tonnage is as follows:

Hull.	Name.	Tonnage.	Type.
No. 86	Polar Sea.....	6200	Refrigerator
No. 88	Avocet.....	700	Mine sweeper
No. 87	Polar Land.....	6200	Refrigerator
No. 83	North Pole.....	6200	Refrigerator
No. 94	Bobolink.....	700	Mine sweeper
No. 84	South Pole.....	6200	Refrigerator
No. 96	Naiwa.....	8800	Cargo
No. 95	Lark.....	700	Mine sweeper
No. 88	Polar Bear.....	6200	Cargo
No. 97	Fort Wayne.....	8800	Cargo

This gives a total of 10 vessels launched with a tonnage of 50,700 tons, and it is believed that at least four vessels with a tonnage of 8800 each will be launched before the year ends. The company has a contract for eight vessels of this type, and if conditions permit this program to be carried out, it will mean six vessels launched within less than nine months from the laying of the first keel at the new plant.

On October 30 hull No. 87, a 6200-ton cargo carrier was delivered, and the next day hull No. 96, a similar vessel, was delivered. It is hoped to deliver during the remainder of the year four 6200-ton vessels, hulls No. 83, No. 84, No. 88 and No. 89, two of which are refrigerator ships, and two cargo carriers, and the 8800-ton cargo carriers, hulls No. 97, No. 98 and No. 99.

Would Plant Large Field in Sugar-Within New Orleans City Limits.

New Orleans, La., October 31—[Special.]—A 7000-acre tract of the New Orleans Lake Shore Land Co. along the Lake Ponchartrain at Little Woods, a suburb of New Orleans, will be to a great extent cultivated in cane next season if the recommendation of Dr. W. C. Stubbs, the first director of the Audubon Sugar School, is followed. The orange trees will be planted more thickly and removed from a large portion of this fine, large body of reclaimed wet lands.

This concern went into the hands of a receiver a month or two ago, and E. F. Dickinson, leading sugar plantation expert, was appointed receiver by the New Orleans Federal Court.

To Manufacture Rice Foods.

The Southern Rice Products Co., capital \$500,000, is about to begin manufacturing specially prepared foods from rice at Houston, Tex., according to a report from there. It bought out a plant which had been operating at Los Angeles, Cal., moved its machinery to Houston, added other machinery and leased a building for its factory. That was several months ago, and the plant has just been completed. J. Niday is president, N. Knight and J. K. Hughes, vice-presidents; S. W. Mellon, secretary-treasurer, and Lee Dubois, general manager.

RAILROADS

\$421,550,598 Advanced to Railroads and Water Lines.

The United States Railroad Administration reports that the total amount advanced to the various transportation properties under Government control from April 1 to November 1 was \$421,550,598. This includes both rail and water lines and comprises loans and payments made by the Director-General to companies to meet their needs, besides advances to meet operating deficits to certain roads, construction and betterment costs, and advances on account of the new standardized locomotives and freight cars.

Against these advances certain companies under the same control have turned over to the Director-General from current funds and surplus earnings a total of \$169,060,000, and the American Railway Express Co. has turned over \$20,711,905, making total receipts \$189,771,905, so that the net amount of the advances over and above the receipts for the period was \$231,788,693. The advances to locomotive and freight-car builders (included in the preceding) totaled \$58,433,628.

The only transportation companies in the Southern States which are reported to have turned over to the Director-General for the common fund during this period cash from their surplus balances without asking for any return were: Atlantic Coast Line and Louisville & Nashville railroads, \$14,050,000; Atchison, Topeka & Santa Fe Railway, \$9,300,000; El Paso & Southwestern, \$750,000; New Orleans, Texas & Mexican Railway, \$300,000; Clyde Line, \$300,000; Gulf & Ship Island Railroad, \$150,000; Texarkana & Fort Smith Railway, \$100,000; Mississippi Central Railroad, \$100,000; Cumberland Valley Railroad, \$100,000; Mallory Line, \$100,000.

Among the large cash advances were the following: Pennsylvania Railroad lines, \$56,620,000; New York Central lines, \$55,320,000; New York, New Haven & Hartford Railroad, \$50,000,000; Baltimore & Ohio Railroad, \$22,250,000; Chicago, Milwaukee & St. Paul Railway, \$16,925,000; Illinois Central Railroad, \$15,475,000; Erie Railroad, \$12,900,000; Rock Island lines, \$7,700,000; Southern Railway, \$7,248,000; Southern Pacific, \$7,500,000; Chesapeake & Ohio, \$6,250,000; St. Louis & San Francisco Railroad, \$6,020,000; Seaboard Air Line, \$5,450,000; Missouri Pacific Railway, \$4,850,000; Missouri, Kansas & Texas, \$2,645,000; Norfolk & Western, \$2,500,000; Western Maryland, \$1,812,909; St. Louis Southwestern, \$1,370,000; Central of Georgia, \$1,350,000; Kansas City Southern, \$1,060,000; Terminal Railroad Association of St. Louis, \$825,000; Florida East Coast Railway, \$800,000; Virginian Railway, \$800,000; Norfolk Southern Railroad, \$760,000; International & Great Northern Railroad, \$407,000; Gulf, Mobile & Northern, \$400,000; Kansas City, Mexico & Orient Railway, \$400,000; Georgia Railroad, \$300,000; Midland Valley Railroad, \$270,000; San Antonio & Aransas Pass Railway, \$253,000; Vicksburg, Shreveport & Pacific Railway, \$218,000; Trans-Mississippi Terminal Railroad, \$190,000; Atlanta, Birmingham & Atlantic Railroad, \$189,000; New Orleans Great Northern Railroad, \$120,000.

Doubled Production of Locomotives.

It is announced at Washington by Chairman Baruch of the War Industries Board that the Government has increased the production of standard-gauge locomotives 100 per cent. during the last three months without expenditure, but by a redistribution of orders among the three leading locomotive companies so as to utilize their resources to the best advantage. The output last week was 144 locomotives.

Sale of a Railroad.

The Atlanta & St. Andrews Bay Railway, running from Dothan, Ala., to St. Andrews, Fla., 84 miles, has, according to a report from Atlanta, Ga., been sold to L. Keith, first vice-president of the United Fruit Co., New York, by the owners, Ben W. Steele and Mrs. Alice Steele Powers of Atlanta, to whom it was bequeathed by the late A. B. Steele, who built the road several years ago, practically the entire railroad property being in his estate. It is further stated that the new owner has taken charge of the line.

Branch Road to Pine Lands.

A report from Mobile says that the McLain-Blodgett branch of the Gulf, Mobile & Northern Railroad has been completed for 22 miles from McLain northeastwardly into the Blodgett timber lands, which contain large amounts of virgin long-leaf yellow pine, estimated to amount to about 2,250,000 feet. The line is now in operation to Smithtown, in the Southern part of Wayne county, but grading has been done and rails are being laid for 10 miles to the north of that place for a further extension. Already 30 sawmills are reported operating at different points on the route, and more than 30 carloads of lumber are shipped daily.

There has been talk for some time of building a connection between this branch and the railroad of the Wausau Southern Lumber Co., which runs out of Laurel, Miss., but nothing has been done so far, it appears, to realize that proposition. Only about 10 miles of connecting track would be required.

To Use Any Available Routes Practicable.

It is announced that the traffic division of the United States Railroad Administration has instructed the carriers to establish universal transit, so that shipments from any transit point will be allowed to move over any road without regard to the road which hauls the inbound or raw product to that point. It is provided, however, that this arrangement is to be confined to direct routes and shall not include circuitous or out-of-the-way transportation. Joint rates will be established as soon as possible where necessary if tariffs conflict with the new plan. Before transit arrangements involving circuitous routes or back hauls are abrogated those engaging in such privileges are to be consulted so as to interrupt business as little as possible. When there is a transit charge in effect it is not to be disturbed, but left for further consideration.

Railroad to Be Sold.

The Fort Smith, Subiaco & Eastern Railway, which has been in the hands of receivers since last winter, is to be sold at Paris, Ark., on December 10 under the terms of the mortgage securing its 5 per cent. 20-year bonds, the St. Louis Union Trust Co. being trustee. The line is 14 miles long from Paris to Scranton, Ark., and has been building an extension of 26 miles to Dardanelle, Ark. Henry Stroupe of Paris is president, and L. P. Miles of Memphis, Tenn., vice-president. I. H. Nakdimen of Fort Smith, Ark., and C. H. Sommer of St. Louis, Mo., are the receivers. J. H. Wright of Fort Smith is general manager.

Improved Sleeping Car Service.

In accord with a recent announcement of the Railroad Administration, a sleeping car is now being run on the Federal Express between Washington, D. C., and New Haven, Conn., to accommodate the large volume of travel between Washington, Baltimore and Philadelphia and the New England manufacturing cities and towns which are convenient to New Haven, such as Hartford, Waterbury, New Britain, etc.

Georgia Southern & Florida's Year.

The annual report of the Georgia Southern & Florida Railway for the year 1917 shows operating revenues \$2,983,427.95, increase as compared with 1916, \$313,619; operating expenses \$2,336,080.46, increase \$391,788.41; net operating revenues \$647,347.49, decrease \$78,169.41; operating income after taxes and uncollectible railway revenue \$452,359.35, decrease \$128,887.88; total gross income \$746,928.99, decrease \$8865.54; net income \$358,339.38, decrease \$37,252.38.

Stirling Hosiery Mills.

Particulars concerning the Stirling Hosiery Mills, Bennettsville, S. C., which are expected to be ready to operate soon, show that the building is of brick, 58x188 feet, and cost approximately \$8000. The machinery includes 24 knit and 24 rib machines, the approximate cost of all mill machinery being \$14,000. The power plant is electric, 18 horse-power for the mill and the dye plant. Engineer-architect in charge, H. D. Harrell; daily capacity of the mill, 350 dozen; number of employees, 50. Capital stock is \$50,000. Officers are: President, T. B. McLaurin; vice-president, J. L. McLaurin; secretary, E. C. Rodgers; treasurer, J. B. McLaurin; manager, John L. Swinson.

Good Roads and Streets

Bonds Voted.

Oakville, Tex.—Live Oak county voted \$50,000 for road improvement.

Bonds to Be Voted.

Cotulla, Tex.—La Salle county contemplates voting on \$300,000 bonds for road construction.

Montague, Tex.—Montague county plans election to vote on \$400,000 bonds for road construction.

Contracts Awarded.

Bartow, Fla.—State and Polk county let contract for sand-clay road construction costing \$20,000.

Charlotte, N. C.—City let contract for 12 blocks of street paving.

Norcross, Ga.—Government, State of Georgia, Gwinnett and Fulton counties awarded contract jointly for 7-mile concrete road costing \$200,000.

Winston-Salem, N. C.—City let contract for 85,000 yards of street resurfacing costing \$12,000.

Contracts to Be Awarded.

Accotink, Va.—War Department authorized expenditure of \$111,000 for 7 miles of road improvement.

Augusta, Ark.—Woodruff county will receive \$35,000 additional State appropriation for road construction.

Beaumont, Tex.—Jefferson county will surface 1 mile of street with bituminous or asphalt paving.

Camp Pike, Ark.—War Department will expend \$325,000 to improve roadways at Camp Pike, near Little Rock, with tarvia.

Danville, Ark.—Yell county will receive \$17,890 additional appropriation for highway construction.

Charlotte, N. C.—Mecklenburg county will construct 12 to 14 miles of highway.

Decatur, Tex.—Wise county opened bids November 4 to grade and gravel 41.5 miles of highway, involving 76,000 cubic yards excavation, 55,000 cubic yards gravel surfacing and 100 drainage structures.

Marshall, Ark.—Searcy county contemplates constructing 13 miles of dirt road and 3 steel bridges costing \$30,000.

Nashville, Tenn.—Davidson county has \$56,000 available for road construction.

New Braunfels.—Comal county has \$14,750 Government and State appropriation for highway construction.

Norfolk, Va.—City appropriated \$21,875 for road construction.

Waldron, Ark.—Scott county will construct 42 miles of highway costing \$100,000.

New Texas Sulphur Company Has Heavy New York Backing.

Announcement that the Texas Gulf Sulphur Co. is making arrangements to put in a \$4,000,000 plant to operate at Big Hill, in Matagorda county, Texas, printed recently in the news columns of the MANUFACTURERS RECORD, aroused interest as to the identity of those behind the enterprise, notable for its magnitude. Under date of October 25 information is furnished by the Secretary of State of Texas, giving the names of stockholders of record, as shown in "affidavit accompanying charter of Gulf Sulphur Co.," filed in December, 1909, "and affidavit accompanying amendment to said corporation, increasing capital stock and changing name to Texas Gulf Sulphur Co.," filed July 22, 1918. The list of stockholders shown in the document includes Bernard M. Baruch, John A. Black, Spencer C. Browne, Henry E. Dodge, Frank W. Holmes, D. C. Jackling, Eugene Meyer, Jr., J. D. Mortimer, Daniel G. Reid, New York; Seeley W. Mudd, Washington; Frank J. Boehm, Blanche B. Einstein, E. J. Pietzcker, Theodore Rassieur, St. Louis.

Cotton Ginning Report.

The quantity of cotton ginned from the growth of 1918 prior to October 18, 1918, is reported by the Census Bureau as 6,790,003 bales, which is 1,216,397 bales more than was ginned in 1917, but 513,180 bales less than the number ginned in 1916. In these figures round bales are included and counted as half bales.

In 1918 there were 113,335 round bales, compared with 108,298 bales for 1917, and 136,880 bales for 1916.

The number of Sea Island bales included is 9780 for 1918, 43,815 for 1917, and 65,040 for 1916.

The Huss Manufacturing Co., Bessemer City, N. C., will install 48 additional looms and 2600 more spindles, giving its fine damask manufacturing plant a total of 146 looms and 6000 spindles.

It is believed that large quantities of Southern pine will be required by France and Belgium for immediate construction purposes after the war.

Construction Department

EXPLANATORY

The MANUFACTURERS RECORD seeks to verify the items reported in its Construction Department by full investigation. It is often impossible to do this before the item must be printed or else lose its value as news, and in some items it is found advisable to make statements as "reported" or "rumored," and not as positive information. If our readers will note these points they will see the necessity of the discrimination. We are always glad to have our attention called to errors that may occur.

DAILY BULLETIN

The Daily Bulletin of the Manufacturers Record is published every business day in order to give the earliest possible news about new industrial, commercial, building, railroad and financial enterprises organized in the South and Southwest. It is invaluable to manufacturers, contractors, engineers and all others who want to get in touch at the earliest moment with new undertakings, or the enlargement of established enterprises. The subscription price is \$20.00 per year.

AIRPLANE PLANTS, STATIONS, ETC.

Fla., Key West.—Navy Department let contract Florida Construction & Engineering Co., Key West, at \$80,000 to erect 4 additional buildings at Naval Air Station.

Fla., Pensacola.—Navy Department, Washington, D. C., let contract to H. F. Friestedt Co., Chicago, at \$31,366 to erect addition to naval air station.

BRIDGES, CULVERTS, VIADUCTS

Ark., Marshall.—Searcy County Comms. contemplate building 3 steel bridges and 13-mi. dirt road; cost \$30,000.

Ga., Fort Benning.—War Department, Washington, D. C., let contract W. Z. Williams Co., Macon, Ga., to construct bridge across Uppatoe Creek in connection with railroad extension to Fort Benning, near Columbus; bridge, with approaches through lowlands, will probably be several hundred ft. long; Major J. Paul Jones, Constructing Quartermaster, Exchange Bldg., Columbus.

N. C., Monroe.—Union County Comms. will construct 2-way bridge across Bearskin Creek.

N. C., Rutherford.—Rutherford County Comms. will consider rebuilding of bridge at Logans, washed away by flood.

Okla., Perry.—C. Y. Landon, Oklahoma City, has contract at \$14,525 to construct bridge over Black Bear Creek; 3 steel trusses; reinforced concrete floor.

Tex., Fairfield.—Freestone County Comms. contemplate constructing reinforced concrete bridges and culverts on highway between Navarro and Limestone County lines. Geo. M. Fryer, County Judge.

Tex., Decatur.—Wise County Comms. will construct 10 drainage structures, including 10 concrete and 2 steel bridges; bids opened Nov. 4; J. A. Simpson, County Engr. (See Road and Street Work.)

Va., Norfolk.—City will expend \$300,000 to \$350,000 for reinforced concrete viaduct, 1700 ft. long, at army base. Address A. E. Leach, Supvr.-Engr.

W. Va., Middlesbrough.—Tyler County Comms. let contract to G. F. Watson, Middlebrough, at \$2800, \$5625 and \$10,823, respectively, to construct 55-ft. reinforced concrete arch bridge over Sugar Creek in Mead Dist., 60-ft. reinforced concrete arch bridge over Elk Fork Creek in Ellsworth Dist. and reinforced concrete arch bridge consisting of two 65-ft. spans over Middle Island Creek in Centreville Dist.

CANNING AND PACKING PLANTS

Fla., Fort Myers.—American Fish Products Co., Fort Myers, lately noted with Ocean Leather Co., New York, as planning \$1,000,000 investment for fish canning, dehydrating, etc., further advises Manufacturers Record: A. Ehrenreich, Pres. (of American Fish Products Co.), New York; S. Herlinger, Secy.; Geo. S. Stone, Mgr., both Fort Myers; let contract to F. Pitts, Punta Gorda, Fla., to erect 50x100-ft., 2-story (8) fireproof buildings, 30x50 ft.; install dehydrating machines, canning and processing, also fertilizer machinery; date of opening machinery bids not set; machinery bids to be addressed to Geo. S. Stone, Mgr.; products, hides for leather, fertilizer products and by-products, canned fish, dehydrated and granulated fish products. (Additional facts lately noted, including location of dehydrating stations at Boca Grande, Sanibel Island, Carlos Bay, Lossman's River and Bahia Honda.)

Tenn., Chattanooga.—Wilson & Company increased capital from \$300,000 to \$500,000.

COAL MINES AND COKE OVENS

Ala., Carbon Hill.—Galloway Coal Co., Memphis, Tenn., increased capital from \$300,000 to \$400,000.

Ky., Hazard.—Woodburn Coal Co., capital \$90,000, incptd. by W. G. Polk, P. F. Gorman and W. M. Purcell.

Ky., Grays.—Gordon-Miller Coal & Coke Co., 1402 Lincoln Bldg., Louisville, Ky., R. E. Gordon, Pres.-Mgr., lately noted as planning to erect power plant and install electrically-driven machinery, develops 878 acres; daily capacity of 3 cars to be increased to 10 cars when new machinery (purchased) is installed.

Ky., Hindman.—Carr's Creek Coal Co., capital \$50,000, incptd. by Sam Polon, J. F. Johnson and B. E. Downs.

Ky., Madisonville.—Stirling Coal Co., capital \$20,000, incptd. by Henry J. Glick, Carroll Pattison and Paul Gannon.

Ky., Morton's Gap.—Peerless Coal Mining Co., capital \$80,000, incptd. by William O'Bryant, H. L. Browning and Cleve Medlock.

Ky., Pleasant View.—Estes Jellico Coal Co. increased capital from \$10,000 to \$20,000.

Md., Blittinger.—Wm. A. Morgart of Grantsville, Md., will develop coal mines.

W. Va., Holly.—Beaver Run Coal Co., capital \$500,000, incptd. by H. Chester Johnson, Horace S. Glazier and Charles F. Pike, all of Philadelphia, Pa.

W. Va., Sutton.—Braxton County Coal Co., 616 S. Michigan Ave., Chicago, Ill., organized; W. S. Shaw, Pres.; C. G. Saunders, Secy.-Treas.; both Chicago; Alex. Cameron, V.-P., East Jordan, Mich.; C. A. Duffield, Mgr., Sutton; develop 110 acres; daily output 1 car; lately noted chartered, \$48,000 capital. (See Machinery Wanted - Rails, etc.)

CLAYWORKING PLANTS

Md., Buckeystown.—Bricks.—Columbia Coal & Brick Co. will rebuild plant reported burned.

W. Va., Martinsburg.—Shale Bricks.—National Shale Brick Co., capital \$250,000, incptd. to manufacture shale bricks; will issue \$250,000 in bonds, making \$500,000 investment; plans to erect 3 plants, each within few miles of city; H. H. Emmert is counsel for company.

COTTON COMPRESSES AND GINS

Tex., Lockney.—Ben Whitefield will rebuild cotton gin lately noted burned; has begun construction.

COTTONSEED-OIL MILLS

Ark., Little Rock.—Rose City Cotton Oil Mill increased capital from \$100,000 to \$125,000.

DRAINAGE SYSTEMS

Fla., Jacksonville.—Upper St. John's Drainage Dist. Comms. will enlarge drainage system, increasing acreage from \$267,000 to \$400,000.

ELECTRIC PLANTS

Ala., Birmingham.—Birmingham Railway, Light & Power Co. is reported as considering improvements to plant.

Ark., Eureka Springs.—Home Electric Co. organized by B. H. Blockson, F. A. Butt, C. A. Fuller and others; purchased Eureka

Springs Electric Co.'s properties, including electric-light and ice plant.

Fla., Crescent City.—City, A. E. Lounds, City Clerk, issued \$10,000 bonds for electric-light system.

Ga., Summerville.—City Electric Light Co. organized to construct electric-light system; secure electricity from Summerville Cotton Mills' plant.

Ky., Ashland.—Consolidated Light, Heat & Power Co., Huntington, W. Va., will construct 33,000-volt electric transmission system from Ashland to Ironton, Ohio, 5 mi.; D. L. Evans, Line Supt., to be in charge; also change equipment of 5 sub-stations in Ashland, Huntington, W. Va., and Ironton, Ohio; W. E. Salber, Electrical Supt., to be in charge of installations.

N. C., Monroe.—Bearskin Cotton Mills will construct electric-light system in mill village.

Okla., Hartshorn.—City will vote on proposal to grant franchise to Choctaw Power & Light Co., McAlester, Okla., to construct electric and power system.

Va., Hampton Roads.—War Department let additional contract to John Gill & Sons, Cleveland, Ohio, to construct electrical feeder and distribution system at naval training camp and hospital. (See Road and Street Work.)

W. Va., Huntington.—Consolidated Light, Heat & Power Co. will change equipment of electrical sub-station. (See Ky., Ashland.)

FERTILIZER FACTORIES

Fla., Fort Myers.—American Fish Products Co., Fort Myers, and Ocean Leather Co., 82 Beaver St., New York, proceeding with establishment of plant noted in September. (See Canning and Packing Plants.)

Ga., Atlanta.—Georgia Sulphur Ore Co., authorized capital \$1,000,000, incptd. by Fred. S. Wilson, Dan S. Walraven, D. Dawson and others; will manufacture fertilizer and fertilizer ingredients; also mine minerals.

FLOUR, FEED AND MEAL MILLS

Mo., Tracey.—Northrup Milling Co. is reported to rebuild flour mill burned at loss of \$90,000.

N. C., Charlotte.—Mecklenburg Mills Co., capital \$40,000, incptd. by N. A. Cooke of Charlotte, E. L. Child and T. H. Watson, both of Whittemire, N. C.

Okla., Jefferson.—Morrison Bros. Mills organized; C. G. Morrison, Pres.; C. L. Morrison, V.-P.; C. J. Morrison, Secy.-Mgr.; erect 6-story, 66x36-ft. building, also 36x36-ft. power plant; fireproof buildings; cost \$150,000; contract let to Burrell Engineering Co., Chicago; purchased machinery, cost \$40,000; daily capacity 600 bbls. flour, 300 bu. corn; also letting contract for 8 tub tanks, 16x50 ft., as addition to present elevator. (Lately noted chartered, \$150,000 capital.)

Va., Richmond.—Alfred M. Quick, Engr., 706 Munsey Bldg., Baltimore, Md., is preparing plans for flour mill, hydro-electric plant and dam costing \$100,000; will erect 1-story buildings.

FOUNDRY AND MACHINE PLANTS

Ala., Birmingham.—Machine Shop.—Southern Sewer Pipe Co. will rebuild machine shop reported burned at loss of \$75,000.

Fla., Key West.—Machine Shop.—Navy Department, Washington, D. C., let contract to Kral Construction Co., 350 N. Clark St., Chicago, Ill., to erect addition to machine shop; cost \$3335.

Ky., Ashland.—Thornton Trolley Wheel Co., capital \$250,000, incptd. by Frederick Thornton, T. M. Adams and P. M. Scott.

Mo., Independence.—Carburetors.—Hale Kerosene Carburetor Co. organized by E. J. Killen, Omaha, Neb., and J. A. Abbott, Kansas City, Mo.

Mo., Kansas City.—City Engineering Department has plans for machine shop at Quindaro pumping station; 1 story; 30x65 ft.; W. G. Goodman, Ch. Engr.

Okla., Tulsa.—Pipe Derrieks, etc.—C. P. Slater, Drumright, Okla., will build plant to manufacture pipe derrieks, turnbuckle rigs and pulling machines.

Tenn., Chattanooga.—Dyeing Machines.—Vacuum Dyeing Machine Co., capital \$20,000,

incptd. by D. C. Rogers, C. C. Browne, E. Murphy and others.

Tex., College Station.—Forge Shop.—Agricultural and Mechanical College will erect forge shop for school of mechanical engineering.

Va., Pulaski.—Steel Castings.—Pulaski Foundry & Mfg. Co. will manufacture castings in addition to present production. Install 2-ton steel converter and other equipment.

GAS AND OIL ENTERPRISES

Ky., Fort Estill.—Chenault Oil & Gas Co. increased capital from \$75,000 to \$120,000.

Ky., Lexington.—Pond River Oil Co., capital \$80,000, incptd. by George Collins, R. Humphrey and Frank McKee.

Ky., Louisville.—Shareholder Oil Association, capital \$10,000, incptd. by W. H. J. E. Weiger and L. L. Baldwin.

Ky., Jackson.—Kentucky Fuel & Oil Co., capital \$90,000, incptd. by Ryland C. Mink, Bedford Bowman, J. L. McCoy and others, will drill. (See Machinery Wanted—Culverts; Drilling Machinery.)

Okla., Oklahoma City.—Legal Tender Oil Co., capital \$40,000, incptd. by J. B. Allen, L. B. Pritchard and C. H. Cameron.

Okla., Tulsa.—Miller Ranch Oil & Gas Co., capital \$90,000, incptd. by Isaac Shuler, E. George and G. G. Mortimer.

Okla., Tulsa.—Dixie Girl Petroleum Co., capital \$15,000, incptd. by W. O. Allison, D. Long and W. E. Stonecipher.

Tex., Bryan.—Oil-pumping Station.—Prairie Pipe Line Co., Independence, Kan., will erect pumping station in connection with pipeline construction. (See Tex., Ranger.)

Tex., Cypress.—Oil-pumping Station.—Prairie Pipe Line Co., Independence, Kan., will erect pumping station with connection with pipeline construction. (See Tex., Ranger.)

Tex., Dallas.—Oil Products.—Oil Products Co., capital \$100,000, incptd. by F. W. White, Carl Lemcke, C. C. Frazer and others.

Tex., Fort Worth.—Gas Line.—Navy Department, Washington, D. C., let contract to Edwin A. McPherson, 214 Texas Bank Bldg., Fort Worth, at \$478,000, to construct gas line.

Tex., Electra.—Refinery.—Beaver-Electra Refining Co., \$300,000 capital, is proceeding with construction of 2000-bbl. plant; equipment purchased; Geo. V. Taylor, Ch. Engr.

Tex., Hico.—Oil-pumping Station.—Prairie Pipe Line Co., Independence, Kan., will erect pumping station in connection with pipeline construction. (See Tex., Ranger.)

Tex., Ranger.—Oil-pumping Station.—Prairie Pipe Line Co., Independence, Kan., will erect pumping stations at Ranger, Opress, Bryan and Hico, Tex., in connection with construction of pipeline from Knapfield field. (Lately noted to expend several million dollars for 325-mi. oil pipe line to Gulf Coast, to have daily capacity of 6000 bbls. oil from North Texas field.)

Tex., San Antonio.—Mexican-American Petroleum Co., \$300,000 capital, incptd. by John J. Hawes, Eduardo R. Vars, both of San Antonio, and others.

W. Va., Hendricks.—Hendricks Oil & Gas Co., capital \$10,000, incptd. by W. O. McNeely, C. W. Minear, A. S. Lindsay and others.

W. Va., Shinnston.—L. L. Oil & Gas Co., capital \$50,000, incptd. by W. O. Wyatt, R. Johnson, Isaac Peters and others.

HYDRO-ELECTRIC PLANTS

La., Alexandria.—Welman Bradford, Engr., is interested in plan to construct hydro-electric plant, irrigation and navigation systems; divert water of Red River to plant.

W. Va., Millwood.—War Department, Washington, D. C., will construct power plant on Ohio River Dam No. 23, near Millwood. W. Va., Wheeling.

W. Va., Wheeling.—War Department, Washington, D. C., will construct power plant on Ohio River at Dam No. 23 near Millwood, at Dam No. 25 near York and Dam No. 26 near Morgan, W. Va.

ICE AND COLD-STORAGE PLANTS

Ark., Eureka Springs.—Home Electric Co. organized by B. H. Blockson, F. A. Batt, C. A. Fuller and others; purchased Eureka Springs Electric Co.'s properties, including ice and electric-light plants.

Ga., Fort Benning.—War Department, Washington, D. C., will establish ice and refrigerating plant at Fort Benning, near Columbus; Selden-Breck Construction Co., St. Louis, Mo., has general contract; J. Paul Jones, Constructing Quartermaster, Exchange Bldg., Columbus.

Mo., Kansas City.—Interstate Ice & Cold Storage Co., 25th and Summit Sts., will erect ice plant, 1 story, 65x125 ft., and cold-storage building, 1 story, 80x100 ft.

Okl., Tulsa.—Independent Packing Co., 25 E. 12th St., will erect building; install refrigerating machinery and engine.

Tex., Camp MacArthur.—War Dept. will install cold-storage plant at Camp MacArthur near Waco.

IRRIGATION SYSTEMS

La., Alexandria.—Welman Bradford, Engr., is interested in plan to construct irrigation and navigation systems and hydro-electric plant; will divert waters of Red River to Gulf.

Tex., Ballinger.—Frank Pokorny plans to construct dam across Colorado River in Runnels County to impound water for irrigation for 27 acres.

Tex., Gatesville.—W. H. Smith plans to install pumping plant on Leon River in Coryell County to irrigate 38 acres.

Tex., Marlin.—J. J. Dean, Waco, Tex., plans to install pumping plant on Brazos River in Falls County, 8 mi. from Marlin, to irrigate land.

Tex., Marlin.—Marlin Grocery Co. contemplates installing pumping plant on Brazos River in Falls County to irrigate 100 acres.

Tex., Marlin.—T. C. Westbrook, Waco, Tex., plans to install pumping plant on Brazos River in Falls County, 5 mi. from Marlin.

Tex., New Braunfels.—F. G. Blumberg will install pumping plant on Comal Creek in Comal County.

Tex., Presidio County.—Parsons & Simpson (G. C. Simpson of San Antonio, Tex., and C. K. Parsons of Englewood, N. J.) plan to construct dam across Capote Creek in Presidio County, in connection with plans for mining, milling and irrigation; provide irrigation for 19 acres.

Tex., Rio Grande.—Rio Grande City, F. R. and E. D. Ratcliff, contemplate installing pumping plant on Rio Grande to irrigate 514 acres.

Tex., San Antonio.—L. T. Wright and L. E. Sanders plan to install pumping plant on Leon Creek to irrigate 71 acres.

Tex., Seguin.—Arno and Ludwig Link contemplate installing pumping plant on Guadalupe River in Guadalupe County to irrigate 10 acres.

Tex., Seguin.—W. A. Adams plans to install pumping plant on Guadalupe River, 1 mi. from Seguin, to irrigate 41 acres.

Tex., Donna.—Donna Irrigation Dist. voted \$60,000 additional bonds for extension of canals and ditches and installation of additional machinery in pumping plant; reported to enlarge tract.

LAND DEVELOPMENTS

Ga., Atlanta.—Century Orchard Co., capital \$50,000, inceptd. by Jas. O. Winn, W. L. Pomeroy and A. G. Powell.

Ky., Louisville.—Union Land & Development Co., capital \$25,000, inceptd. by B. F. Wetzel, Basil Doerhoefer and J. S. Laurent.

LUMBER MANUFACTURING

Ala., Fayette.—Southern Lumber Co., lately noted increasing capital stock to \$200,000, continues operation of plant of 60,000 ft. daily capacity.

Ala., Carrollton.—Collins & Garrison will rebuild planing mill burned at loss of \$5000.

Ala., Montgomery.—Central Lumber Co., lately noted inceptd., capital \$200,000, organized by L. F. Rollins, Pres.; J. M. Dennis, Sec.; continues operation of established plant.

Fla., Pensacola.—Star Lumber Co., Cantonment, Fla., lately noted organized, capital \$100,000, will operate 2 mills, 15,000 ft. daily capacity each, in Baldwin County, Ala.; Lena H. Dinkins, Pres.; E. J. Buck, Secy.; John H. Kahler, Treas., Cantonment, Fla. (Previously noted, under Ala., Bay Minette.)

La., Alexandria.—L. E. Crawford, Shreveport, La., purchased long-leaf pine timber tract in Rapides Parish, near Alexandria; will erect sawmill; daily capacity 30,000 ft.; Z. K. Ferguson, Leesville, La., will be in charge; main office, Lake Charles, La.

La., Westlake.—Lock Moore Co., Geo. Law, Secy., will construct sawmill plant of mill construction; install circular rig and gang equipment; manufacture long-leaf yellow pine. In August noted to rebuild plant burned at reported loss of \$200,000. (See Machinery Wanted—Engine.)

Miss., Howison.—Native Lumber Co. will rebuild drykilns reported burned.

Miss., Clarksdale.—Johnson Harlow Lumber Co. increased capital from \$30,000 to \$100,000; contemplates improvements to plant.

W. Va., Bridgeport.—Riley & Riley Co. will rebuild planing mills reported burned at loss of \$10,000.

MINING

Ark., Mena.—Continental Mining & Royalty Co., capital \$50,000, inceptd.; J. W. Cook, Pres.; J. D. Budd, V.-P.; J. G. Wherry, Secy.-Treas.

Ark., Batesville.—Manganese.—White River Manganese Co., capital \$200,000, inceptd.; Chas. F. Cole, Pres.; Leland Morrow, V.-P.; G. E. Gathright, Secy.-Treas.

Fla., Lake Weir.—Sand.—Lake Weir Washed Sand Co., E. W. Ellis, Pres. and Gen. Mgr.,

continues manufacture of yellow pine and hardwood lumber; 2 mills in Texas, 2 in Arkansas.

Va., Norfolk.—Sand.—Atlantic Sand Co., capital \$10,000, inceptd. by A. Brooke Taylor, Pres.; Robert M. Darden, Secy.

W. Va., Moundsville.—Storage-acid Tank.—United Zinc Smelting Corp. will erect storage-acid tank; 30 ft. in diam.; 40 ft. high.

MISCELLANEOUS CONSTRUCTION

Ga., Fort Benning.—Bakery.—War Department, Washington, D. C., will erect bakery at Fort Benning, near Columbus; Selden-Breck Construction Co., St. Louis, Mo., has general contract; J. Paul Jones, Constructing Quartermaster, Exchange Bldg., Columbus.

La., New Orleans.—Earthwork.—United States Engineer Office, 519 Canal St., let following contracts to construct earthwork: C. D. Cook, Venice, La., 14,000 cu. yds. in Barataria Dist.; Lower Coast Construction Co., 122 Chartres St., New Orleans, 580,000 cu. yds. in La Fourche Dist. and 470,000 cu. yds. in Pontchartrain Dist.; P. M. Adams, City Price, La., 50,000 cu. yds. in Barataria Dist. and 18,000 cu. yds. in Lake Borgne Dist. (Noted in September as inviting bids to construct 4,522,000 cu. yds. earthwork in Lower Tensas, Atchafalaya, La Fourche, Barataria, Pontchartrain and Lake Borgne Levee Dists.

THE OFFICIAL PROPOSAL ADVERTISEMENTS

Appear This Week On Page 116

Notices of bond sales, construction and improvement contracts to be let, equipment and supplies to be purchased, franchises offered, etc., inserted in this department bring bids from the most important bond buyers, investors, financial institutions, contractors, engineers, architects, manufacturers, and supply houses throughout the country.

Rate 25 cents per line per insertion.

The PROPOSAL department goes to press at noon Tuesday for the issue of the following Thursday. If you cannot mail advertisement in time for any particular issue, please wire copy by day letter. Send for booklet of testimonial letters from public officials who have used the PROPOSAL department of the Manufacturers Record, for bond sales, construction work, etc.

lately noted inceptd., \$30,000 capital, develops acreage with daily capacity 800 tons washed sand; all equipment supplied.

Ga., Atlanta.—Sulphur Ore.—Georgia Sulphur Ore Co., authorized capital \$1,000,000, inceptd. by Fred. S. Wilson, Dan S. Walraven, D. Dawson and others; will mine minerals and manufacture fertilizer and fertilizer ingredients.

Ga., Oglethorpe.—Granite.—Elbert Blue Granite Co., Atlanta, Ga., lately noted inceptd., \$74,800 minimum and \$360,000 authorized capital, by Robert L. Foreman and others, has no plans for development of 200-acre granite quarry acquired under underwriting arrangement; may dispose of the property, which contains building and monumental granite.

Ky., Mexico.—Fluorspar.—Ohio Valley Fluorspar Co., capital \$50,000, inceptd. by G. W. Killebrew, R. W. Grizzard and C. S. Nunn.

Mo., Joplin.—Lead and Zinc.—Bankers' Mining Co. will install electrical equipment, crushing machinery, etc., in 250-ton milling plant in course of erection near Bell Center.

Mo., Joplin.—Badger Mining Co. let contract Edgar Foster of Joplin to construct concentrating plant; cost \$56,000.

Mo., Chittwood.—Pfaffle & Kelley let contract to Carmody V. McGee, 631 Frisco Bldg., Joplin, Mo., to remodel 200-ton plant; will install engine, sludge tables, air compressors, etc.; cost \$50,000; J. P. Kelley, Supt.

Mo., Joplin.—C. H. and M. Mining Co. will remodel and improve plant; build tramway; install scales, sludge tables, engine, etc.; cost \$6000; Burt Pitts, Supt.

Okl., Oklahoma City.—Zinc Ores Corp., capital \$50,000, chartered by A. L. Camp, Oklahoma City; Frank M. Kennedy, Yellville, Ark., and B. G. Neville, Arlington, Tex.

Okl., Quapaw.—Lead and Zinc.—Farmers' Lead & Zinc Co., capital \$75,000, inceptd. by J. J. Sallaska, D. O. Nichols and H. G. Gaede.

Okl., Picher.—Vantage Mining Co. increased capital from \$75,000 to \$150,000.

Tex., Texarkana.—Four States Lumber Co., lately noted increasing capital to \$75,000,

Mo., St. Louis.—Drugs.—Lambert Pharmacy Co. is reported to remodel brick factory building; cost \$2500.

Mo., St. Louis.—Chemicals.—Mallinckrodt Chemical Works, 2d and Mallinckrodt Sts., let contract A. H. Haeseler Building & Contracting Co., Walnut Bldg., St. Louis, to build chemical plant; cost \$6000.

Okl., Tulsa.—Oil-well Supplies.—Oil Well Supply Co. will erect two 1-story brick and steel manufacturing buildings; cost \$75,000.

Tex., Corpus Christi.—Seawall.—City, H. A. Stevens, City Engr., is reported to construct seawall, cost \$600,000. Address The Mayor. (Previously noted.)

Va., Hampton Roads.—Bulkhead.—War Department, Washington, D. C., let contract McHarg-Barton Co., 171 Madison Ave., New York, at \$181,904 to construct reinforcing bulkhead at lagoon.

Va., Langley Field.—Heating Plant.—War Department authorized installation of heating plant and temporary buildings at Langley Field; estimated cost \$78,000.

W. Va., South Charleston.—Fence.—Bureau Yards and Docks, Navy Department, Washington, D. C., will build fence; Specification 3572; cost \$2400.

MISCELLANEOUS ENTERPRISES

Ala., Montgomery.—Publishing.—National Publishing Co., capital \$50,000, inceptd. by E. M. Noble, Brame Hood and J. L. Thornton.

Fla., Boca Grande.—Fish Dehydrating.—American Fish Products Co., Fort Myers, and Ocean Leather Co., 82 Beaver St., New York, will construct dehydrating stations at Boca Grande, Sanibel Island, Carlos Bay, Caxambas, Lossman's River, Bahia Honda; install dehydrating machines of 2 tons daily capacity each; raw material to be dehydrated at these plants, then conveyed to main plant at Fort Myers. (See Canning and Packing Plants, Fla., Fort Myers.)

Ga., Dublin.—Grain Elevator.—Farmers' Co-operative Assn. organized to erect lately noted grain elevator; C. H. Kittrell, Pres.; R. T. Grier, V.-P.; C. F. Parker, Secy.; J.

R. Cherry, Mgr.; build wood structure, roofed, cost complete within \$12,000; install elevator machinery for handling corn, grain, velvet beans, peanuts, etc.; also operate co-operative store. Lately noted. (See Machinery Wanted—Agricultural Implements and Machinery, etc.)

Ga., Fort Benning.—Laundry.—War Dept., Washington, D. C., will erect laundry costing \$250,000 at Fort Benning, near Columbus; Selden-Breck Construction Co., Fullerton Bldg., St. Louis, Mo., has general construction contract; Maj. J. Paul Jones, Constructing Quartermaster, Exchange Bldg., Columbus.

La., Alexandria.—Navigation.—Welman Bradford, Engr., is interested in plan to construct navigation and irrigation systems and hydro-electric plant; will divert waters of Red River to Gulf.

Mo., Platte City.—Northrup Milling Co. will rebuild grain elevator burned at loss of \$20,000.

Okl., Enid.—Publishing.—News Publishing Co., capital \$50,000, inceptd. by Richard M. Elam, Ernest C. Dunlap and Bertha Dunlap.

Okl., Jefferson.—Elevator Addition.—Morrison Bros. Mills, C. G. Morrison, Pres., will construct 8 tub tanks, 16x60 ft., as addition to present elevator. (See Flour, Feed and Meal Mills.)

S. C., Charleston.—Laundry.—Navy Department, Washington, D. C., will erect building, 50x100 ft., for laundry; purchased equipment costing \$5000, including 2 washers and 2 collar machines; Chief J. M. Verlander to superintend operation.

Tenn., Dresden.—Hardware.—Brasfield Hardware Co., capital \$12,000, inceptd. by E. B. Killebrew, L. P. Moore, W. D. Brasfield and others.

Va., Norfolk.—Mineral-water Bottling.—Landale Springs Corp., capital \$24,000, chartered; C. E. Herbert, Pres.; R. W. Hallet, Secy.

MISCELLANEOUS FACTORIES

Ala., Choctaw Point.—Dyes.—Consumers' Dye Woods Products Co., Mobile, Ala., contemplates increasing capacity of plant.

Ala., Montgomery.—Planos.—Jesse French & Sons Piano Co. increased capital from \$50,000 to \$100,000.

Ala., Selma.—Bottling.—Selma Chero-Cola Bottling Co., capital \$2500, inceptd. by L. M. Hooper, J. E. Auffer and H. C. Armstrong.

Fla., Fort Myers.—Fish Products.—American Fish Products Co., Fort Myers, and Ocean Leather Co., 82 Beaver St., New York, proceeding with establishment of plant noted in September; to manufacture hides for leather, also other products. (See Canning and Packing Plants.)

Fla., Palatka.—Moss Factory.—Flamoss Company, A. H. Selle, Mgr., advises Manufacturers Record: Capital \$50,000; erecting moss-ginning plant, total capacity 20 tons daily; make "Vego Hair" from tree moss. (Noted in September to establish plant for manufacturing moss product for upholstering; establish purchasing agencies, John Lynn, purchaser.)

Fla., St. Petersburg.—Grapefruit Bars.—C. M. Blanc and L. M. Hoffmeister contemplate enlarging and increasing capacity of plant manufacturing jellied fruit bars from grapefruit; will install machinery.

Ga., Atlanta.—Shirts and Collars.—Geo. P. Ide & Co., Troy, N. Y. (temporary office, 808 Empire Bldg.), will establish shirt and collar factory.

Ky., Covington.—Willard Mfg. Co., G. F. Mattman, Pres., 3d and Madison Sts., let contract to Joe Wilbers, 610 W. 7th St., Covington, to erect factory; 1 story; 50x50 ft.; cost \$15,000; C. C. and E. A. Weber, Archts., Miller Bldg., Cincinnati, Ohio.

Ky., Lexington.—Creamery.—Lexington Creamery Co. increased capital from \$25,000 to \$35,000.

Ky., Louisville.—Cheese.—Southern Package Cheese Co., capital \$10,000, inceptd. by John Manky, Stanley Newhall and A. G. Vierling.

Ky., Louisville.—Clothing.—Cohen & Isler Co., capital \$6000, inceptd. by Samuel Cohen, Anna Isler and Hannah Cohen.

Ky., Paducah.—Cigars.—David Levy is reported to erect cigar factory.

Mo., St. Louis.—Electric Equipment.—Pan Electric Mfg. Co., 735 S. 4th St., will erect 1-story brick and steel addition.

N. C., High Point.—Paper Boxes.—Reidsville Paper Box Co., J. B. Pipkin, Pres., lately noted increasing capital to \$125,000, will establish branch at High Point; purchased 200x300-ft. brick building; install machinery, cost \$30,000; daily capacity 10,000 to 20,000 boxes.

N. C., Ramseur.—Brooms.—Deep River

In writing to parties mentioned in this department, it will be of advantage to all concerned if the Manufacturers Record is mentioned.

Broom Co., capital \$50,000, inceptd. by B. E. Smith of Ramseur, John M. Caviness of Ashboro, N. C., and A. C. Pugh of Franklinville, N. C.

Tenn., Kingsport—Chemicals.—Federal Dye & Chemical Co. (controlled by Government) will rebuild chloride distilling plant at chemical works reported burned at loss of \$25,000 to \$30,000.

Va., Bristol—Chemicals.—Cumberland Chemical Corp., capital \$100,000, chartered; E. W. Pendleton, Pres., Floyd, Va.; E. R. Levy, Secy., New York.

Va., Lodge—Brooms.—Bailey B. Dawson, lately noted to establish broom factory, with machinery wanted, will have daily capacity 75 brooms.

Va., Petersburg—Trunks and Bags.—Holden Trunk & Bag Co., capital \$100,000, inceptd.; S. West Holden, Pres.; T. J. Gillis, Jr., Secy.

Va., Richmond—Chemicals.—Frank W. Lewis, capital \$15,000, inceptd.; Frank W. Lewis, Pres., Richmond; E. L. Besson, Secy., Norfolk, Va.

Va., West Point—Wood Pulp, etc.—Chesapeake Corp., capital \$300,000, chartered; Christopher Hannevig, Pres.; Ralph James M. Bullock, Secy.; both of New York.

MOTOR CARS, GARAGES, TIRES, ETC.

Ala., Birmingham—Motor Trucks.—Birmingham Motor Truck Co., capital \$15,000, inceptd. by E. C. Creel, R. E. Mitchell, C. H. Chichester and others.

Ky., Louisville—Automobiles.—West Broadway Auto Co., capital \$3000, inceptd. by H. M. Poutch, A. B. Madlon and H. Halblieb.

La., Longville—Garage.—Longville Lumber Co. will rebuild burned garage.

Okla., Enid—Garage, Repairs, etc.—Oklahoma Garage & Sales Co., 209 E. Broadway, organized; R. M. Browning, Pres.; H. A. McDonald, V.-P.; A. L. Rippey, Secy.; building plans not fully decided; install repair equipment, automobile accessories, etc.; investment \$7000 to \$10,000; lately noted inceptd., capital \$15,000. (See Machinery Wanted—Automobile Accessories; Garage Equipment.)

S. C., Spartanburg—Automobiles.—Buice Auto & Transfer Co., capital \$60,000, inceptd. by W. E. Buice and H. E. Ravenal.

S. C., Spartanburg—Tires.—Standard Tire Co., capital \$15,000, inceptd. by W. L. Speights, S. S. Crittendon and W. E. Huist.

S. C., Charleston—Automobiles.—Consolidated Auto & Truck Co., 147 Meeting St., organized; H. Lee Harvey, Pres.; State agents for Cole "S" automobile and district agents for Bethlehem trucks.

S. C., Beaufort—Garage.—Nivolt Garage & Supply Co., capital \$3000, inceptd. by W. N. Niver, W. H. Oltman and Claud M. Aman.

Tex., Hillsboro—Automobiles.—Hill County Motor Co. increased capital from \$5000 to \$12,000.

Tenn., Memphis—Tires.—Eight Sixteen Vulcanizing Co., capital \$15,000, inceptd. by Luther McCallum, M. M. McCallum, J. B. Hurt and others.

Va., Richmond—Automobiles.—Commercial Motors, capital \$25,000, inceptd.; C. M. Smith, Pres.; J. B. Berger, Secy.

RAILWAY SHOPS, TERMINALS, ROUNDHOUSES, ETC.

Miss., Jackson.—Illinois Central R. R., A. S. Baldwin, Chief Engr., Chicago, let contract G. A. Johnson & Son, Chicago, to construct engine pits and paving in roundhouse.

W. Va., Cumbo.—Cumberland Valley R. R. (U. S. Railway Administration), H. A. Lane, Chief Engr., Baltimore, let contract Price Construction Co., Maryland Trust Bldg., Baltimore, to erect 2-stall roundhouse; cost \$30,000.

W. Va., Fairmont.—United States Railway Administration, W. G. McAdoo, Director-General, Washington, authorized expenditure of \$2,000,000 for extension and improvements for Baltimore & Ohio, West Virginia Northern and Monongahela River railroads; improvements will include car-repair shops, engine-house, turntables, etc., and housing facilities for employees; Arthur W. Thompson, Federal Mgr., and E. E. Hamilton, Asst. Mgr., will be in charge of construction. (Baltimore & Ohio R. R. lately reported to have let contract to Vang Construction Co., Cumberland, Md., to erect wheel-pressing and machine shops and roundhouse in connection with yard extension.)

ROAD AND STREET WORK

Ala., Fort Morgan.—War Dept., Washington, D. C., will construct roadways and

walks and extend sewer, water and electric-light systems; Jett-Muths Construction Co. of Mobile, Ala., is general contractor.

Ark., Camp Pike.—War Department, Washington, will expend \$325,000 to improve roadways at Camp Pike, near Little Rock, with tarvia. (War Department noted in September to construct 14 mi. of road at Camp Pike, Stewart-McGehee Construction Co. of Little Rock being contractor.)

Ark., Marshall.—Searcy County Comms. contemplate building 13-mi. dirt road and 3 steel bridges; cost \$30,000.

Ark., Waldron.—Scott County Comms. will construct 42 mi. of highway across county from Sebastian to Montgomery County lines; cost about \$100,000.

Ark., Augusta.—State Highway Comsn., Little Rock, approved appropriation of \$10,000 additional for road near Cotton Plant, and \$25,000 additional for general road construction throughout Woodruff County.

Ark., Danville.—State Highway Comsn., Little Rock, authorized \$17,890 additional appropriation for road construction in Yell County.

Fla., Bartow.—State Road Department, Ed. Scott, Chmn., Tallahassee, Fla., and Polk County Comms., Bartow, let contract Phil Lacey of Zolfo, Fla., to construct sand-clay road from Frostproof to De Soto County line; cost \$20,000; construction under supervision of State Road Department; Wm. F. Coker, State Road Commr., Tallahassee.

Ga., Fort Benning.—War Department, Washington, D. C., plans to pave Lumpkin Road from city to Fort Benning, near Columbus, with concrete; Selden-Breck Construction Co., St. Louis, Mo., has general construction contract; J. Paul Jones, Constructing Quartermaster, Exchange Bldg., Columbus.

Ga., Norcross.—Government, State of Georgia, Gwinnett and Fulton counties let contract jointly to Smith Construction Co., Forsyth Bldg., Atlanta, to construct Federal-aid road to Norcross rifle range; 7 mi.; concrete paving; grading complete; cost \$200,000; form link in National Highway.

Miss., Corinth.—Alcorn County Supers., O. M. Hinton, Clerk, will gravel roads from Corinth to Iuka Road Dist.; bids opened Nov. 6; plans by L. W. Murphy, Civil Engr.

Mo., Hartville.—Wright County Comms. plan to construct road; Frank E. Creasser, County Surveyor.

Mo., Poplar Bluff.—State Highway Comms., Jefferson City, Mo., approved construction of road from Poplar Bluff to Wayne County line; Alexander W. Graham, State Highway Engr., Jefferson City.

N. C., Charlotte.—Mecklenburg County Comms. will construct road between Charlotte and radio station to be erected at Bakers, 4 mi. from Monroe; length, 12 to 14 mi.

N. C., Charlotte.—City let contract Noll Construction Co., Chattanooga, Tenn., to repave Trade St., from Mint to College St., and Tryon St., from Morehead to Seventh St.; total of 12 blocks.

N. C., Raleigh.—Wake County Comms. contemplate extending concrete road to camp.

N. C., Winston-Salem.—City, Joseph Frith, Commr. Public Works, let contract to Atlantic Bitulithic Co., Richmond, Va., for resurfacing 85,000 yds.; cost \$12,000. (Lately noted.)

Okla., McAlester.—Pittsburg County Comms. will improve Jefferson Highway, from McAlester to Savanna; grade and surface with shell or clay; W. J. Kindrick, County Clerk.

Tenn., Nashville.—Davidson County Comms. have \$56,000 available for road construction.

Tex., Beaumont.—Jefferson County Comms. will pave 1 mi. 16th St., from Port Arthur to Taylor's bayou bridge, West Port Arthur; 15 ft. wide; 1-in. topping of bituminous or asphalt over shell road.

Tex., Oakville.—Live Oak County voted \$50,000 bonds to improve road between Puget Sound and Gulf. Address County Comms.

Tex., Big Spring.—Howard County defeated bonds for road construction. (Lately reported to vote on \$75,000 bonds.)

Tex., Braunfels.—Comal County Comms. contemplate constructing Highway No. 2; Government appropriated \$7250 and State \$7500 toward cost.

Tex., Camp Bowie.—Tarrant County Comms., Fort Worth, let contract Geo. H. Clifford (Pres. Chamber of Commerce) to

pave Reika Ave. at Camp Bowie, near Fort Worth. (War Department lately noted to have authorized expenditure of several thousand dollars for tarvia-surfaced roads at Camp Bowie.)

Tex., Cotulla.—La Salle County Comms. contemplate ordering election to vote on \$300,000 bond issue to build roads.

Tex., Crowell.—Foard County Comms. let contract to Baldwin & Stovall of Crowell to construct State Highway No. 28.

Tex., Dallas.—City receives bids for paving Market St., from Jackson to Young Sts.; G. D. Fautraux, City Engr.

Tex., Montague.—Montague County Comms. plan ordering election to vote on \$400,000 bond issue to build roads in Dist. No. 2.

Va., Norfolk.—City appropriated \$21,875 for road from Freitas Station to Naval Training School. Address The Mayor.

Tex., Decatur.—Wise County Comms. will grade and gravel 41.5 mi. of highway; 76,000 cu. yds. excavation; 55,000 cu. yds. gravel surfacing; 100 drainage structures, including 10 concrete and 2 steel bridges; bids opened Nov. 4; J. A. Simpson, County Engr. (See Machinery Wanted—Road Construction.)

Va., Accotink.—War Department authorized following construction: Improvement of road from Camp Humphreys to Accotink, 2.6 mi. long and 18 ft. wide, and road from Pohick to Lorton, 4.4 mi. long and 18 ft. wide, total estimated cost \$111,000; F. R. Harris, Pres. Board of Control of War Construction Activities for Hampton Roads Dist. (Government lately noted, under Va., Portsmouth, to construct 25 mi. highway to complete road system connecting military stations and naval bases in Hampton Roads vicinity for which \$2,000,000 is appropriated.)

Va., Hampton Roads.—War Department let additional contract to John Gill & Sons, Cleveland, Ohio (contractors for general construction), to construct roads, walks, sewers, fresh water pipe line and electrical feeder and distribution system at naval training camp and hospital; estimated cost \$1,000,000.

SEWER CONSTRUCTION

Ala., Fort Morgan.—War Dept., Washington, D. C., will extend sewer, water and electric-light systems and construct roadways and walks; Jett-Muths Construction Co. of Mobile, Ala., is general contractor.

Va., Hampton Roads.—War Department let additional contract to John Gill & Sons, Cleveland, Ohio, to construct sewers, etc., at naval training camp and hospital. (See Road and Street Work.)

TELEPHONE SYSTEMS

Va., Norfolk.—Bureau Yards and Docks, Navy Department, Washington, D. C., will erect 2 radio buildings; Specification 3546; cost \$22,500.

TEXTILE MILLS

Ga., Atlanta.—Cotton Duck.—Department of Justice, Washington, D. C., purchased equipment of machinery for cotton duck plant at United States Penitentiary; includes 500 looms and 78 twisting frames; electric drive. (Previously noted as \$1,000,000 plant; weekly capacity 116,000 lbs. cotton duck; building of reinforced concrete and brick construction, 1 story, 45x219 ft., erected by prison labor at cost of \$129,500; Lockwood, Greene & Co., Archt.-Engrs., Healy Bldg., Atlanta, and Boston, Mass.)

Ga., Newman.—Cotton Yarns.—McIntosh Mills will install vacuum card strippers; ordered equipment.

Ga., Rome.—Hosiery.—Rome Hosiery Mills is reported as contemplating installation of additional equipment.

S. C., Bennettsville.—Hosiery.—Stirling Hosiery Mills, capital \$50,000, organized with T. B. McLaurin, Pres.; J. L. McLaurin, V.-P.; E. C. Rodgers, Secy.; J. B. McLaurin, Treas.; H. D. Harrell is Engr.-Archt.; John L. Swinson, Mgr.; occupy 58x178-ft. brick building, cost \$8000; 24 knitting, 24 ribbing machines, total cost \$14,000; 18 H. P. electric equipment for mill and dye plant; daily capacity 350 doz. (Previously noted inceptd., to establish mill; building purchased and machinery ordered.)

N. C., Bessemer City.—Cotton Damasks.—Huss Mfg. Co. will install 48 looms and 2000 additional spindles; after installation, plant will have total of 6000 spindles and 146 looms. (Lately noted to install machinery to double capacity.)

WATER-WORKS

Ala., Fort Morgan.—War Dept., Washington, D. C., will extend water, sewer and electric-light systems and construct roadways and walks; Jett-Muths Construction Co. of Mobile, Ala., is general contractor.

Fla., Jacksonville.—City will install reciprocating air compressor belted to 200 H. P., 2200-volt, 60-cycle induction motor; compressor capacity not over 200 R. P. M. to deliver 350 cu. ft. per minute at 100 lb. pressure; L. E. Murphy, Engr., Jacksonville.

Ga., Augusta.—City contemplates extending and improving water system to Camp Hancock; betterments will include clear-water basin, pumps, pump wells, pipe connections, coagulating basin, pump at filter plant, flues, buildings, construction of reservoir, etc.; estimated cost \$1,000; plans to secure Federal aid. Address The Mayor.

Ga., Fort Benning.—War Department, Washington, D. C., will construct water system for Fort Benning, near Columbus, secure water from Upatoi Creek; Selden-Breck Construction Co., St. Louis, Mo., has general contract; Major J. Paul Jones, Constructing Quartermaster, Exchange Bldg., Columbus.

Okla., Tulsa.—City Comms. will install additional filtration plant units costing \$1,000; will add facilities sufficient to handle from 6,000,000 to 7,000,000 gals. daily.

Okla., Ardmore.—City will expend \$100,000 on water-works construction; contract let to Ardmore Construction Co., Ardmore, at \$244,000, calls for laying 12-in. pipe line from present reservoir 3 mi. S. of city to Hickory Creek; will soon let contract for concrete dam; Engr., McLean Walton Engineering Co., Oklahoma City.

Tenn., Kingsport.—City will install station plant costing \$50,000; purchased equipment. Address The Mayor.

Va., Hampton Roads.—War Department let additional contract to John Gill & Sons, Cleveland, Ohio, to construct fresh water pipe line, etc., at naval training camp and hospital. (See Road and Street Work.)

W. Va., South Charleston.—Navy Department, Washington, D. C., let contract Carroll Electric Co., 712 14th St. S. E., Washington, D. C., for booster plant to present water system for Naval Ordnance Plant; includes \$300 30x18-ft. hollow-tube construction building, 2 centrifugal pumps, eight 100,000-gal. wood tanks; expend \$100,000.

WOODWORKING PLANTS

Ala., Bay Minette.—Staves.—Baldwin & Lumber Co. organized with W. S. Alder, Pres.; C. G. Lippincott, Secy.; capital \$10,000; occupy 50x100-ft. building of Bay Minette; W. B. Logan, V.-P.; Treas., Pensacola, Fla.; purchased planer and will manufacture into staves and lumber. (Lately noted inceptd. with \$10,000 capital.)

Fla., Jacksonville.—Boxes and Barrels.—Florida Box & Barrel Co., capital \$10,000, inceptd.; R. R. Otwell, Pres.; Grace Otwell, V.-P.; J. P. Wilson, Secy.—Treas.

N. C., Mocksville.—Furniture.—Mocksville Furniture Co. will rebuild main plant lately burned at loss of \$50,000.

Va., Portsmouth.—Wagons.—W. E. Preston will rebuild wagon factory at South R. Preston Ave. reported burned.

FIRE DAMAGE

Ala., Millry.—Dr. W. J. Blount's residence. Va., Portsmouth.—W. S. Parker's shoe factory at South St. and Preston Ave.

Ala., Birmingham.—Southern Sewer Co.'s machine shop; loss \$75,000.

Ark., De Witt.—St. Louis S. & N. Ry.'s freight depot; loss about \$20,000. T. Eaton, Chief Engr., Tyler, Tex.

Md., Buckeystown.—Columbia Coal & Coke Co.'s plant.

N. C., Midland.—E. W. Griffith & Co.'s store building; loss \$3000.

N. C., Salisbury.—Dormitory at Salisbury College; loss several thousand dollars.

S. C., Pageland.—People's Gin Co.'s houses and office building; owned by J. M. Atherton.

Tenn., Kingsport.—Federal Dye & Chemical Co.'s chloride distilling building of chemical plant; estimated loss \$25,000 to \$30,000.

Tex., Benchley.—A. T. Towler's shoe factory; loss several thousand dollars.

Tex., Dickinson.—Oleander Chemical Co.'s Charles Fowler, Pres.; loss \$20,000.

Tex., Weatherford.—Pythian Home, near Weatherford; loss \$10,000; Pat M. Neff, Chrmn. Board of Trustees.
Va., Charlottesville.—"Hempstead," residence in Green Mountain section of Albemarle County, owned by Royal C. Remick; loss \$25,000.
W. Va., Gerrardstown.—W. S. Miller Co.'s stable and barn near Gerrardstown; loss several thousand dollars.

W. Va., Minden.—Residence owned by New River & Pocahontas Coal Co.
W. Va., Nemours.—Dave Shrader's residence.
W. Va., Worthington.—Salvatore Regaluto's store; Luigi Lazaris' store; F. W. Joyce's barn at Annabelle.
W. Va., Bridgeport.—Riley & Riley Co.'s planing mills; loss \$10,000.

basin boatshed at naval air station; Murch Bros. Construction Co., 611 Olive St., St. Louis, is low bidder at \$72,000 for work complete. (Lately noted.)

Md., Indian Head.—Dispensary.—Bureau Yards and Docks, Navy Department, C. W. Parks, Chief, Washington, plans to erect annex to dispensary; specification 3588; cost \$25,900.

Miss., Gulfport.—Latrine and Washhouse.—Bureau Yards and Docks, Navy Department, C. W. Parks, Chief, Washington, receives bids until Nov. 11 to erect latrine and washhouse; cost \$12,900; specification 3587.

N. C., Wilmington.—Lookout Gallery.—Treasury Department, Jas. A. Wetmore, Acting Supervising Archt., Washington, receives bids until Nov. 20 to construct lookout gallery at postoffice; drawings and specifications at office Custodian and office Mr. Wetmore.

Tenn., Nashville.—Hospital.—Government is considering taking over partially-completed Gallaway Hospital and State School for Blind for hospital for wounded men; Charles H. Brandon, Chrmn. Procurement Board, Nashville, may be addressed. (See Hospitals.)

Tex., Brownsville.—Fumigation-houses.—R. Kent Beattie, Chief Pathological Inspector, 702 Carter Bldg., Houston, receives bids until Nov. 15 for furnishing and installing sheet-metal work in fumigation-houses at Brownsville, Laredo, Eagle Pass, Del Rio and El Paso, constructed by Federal Horticultural Board of the United States Department of Agriculture, Washington; cost \$4000 to \$5000; plans and specifications obtainable from Federal Horticultural Board. (See Machinery Wanted—Sheet-metal Work.)

Tex., Camp Travis.—Barracks.—War Department, Washington, will erect four 2-story barracks for enlisted men and 2 barracks for officers; cost \$75,000.

Tex., Del Rio.—Fumigation-house.—See Tex. Brownsville.

Tex., Eagle Pass.—Fumigation-house.—See Tex. Brownsville.

Tex., El Paso.—Fumigation-house.—See Tex. Brownsville.

Tex., Fort Worth.—Hospital.—War Department, Washington, will enlarge base hospital at Camp Bowie; plans include additions to administration building, receiving ward for contagious diseases, wards for medical and surgical branches; also 3 corridors; Col. L. H. Hanson, Commanding Officer.

Tex., Fort Worth.—Motor School.—War Department, Washington, will construct motor transport corps school at Camp Bowie; plans include mess halls, barracks, lecture-rooms, quarters for officers, laboratories, etc.; buildings to cost \$750,000 and equipment \$750,000. (Lately noted.)

Tex., Laredo.—Fumigation-house.—See Tex. Brownsville.

Va., Yorktown.—Administration Building.—Bureau Yards and Docks, Navy Department, C. W. Parks, Chief, Washington, plans to erect administration building; cost about \$57,000; specification 3608.

Va., Cape Charles.—Quarantine Station.—Treasury Department, Jas. A. Wetmore, Acting Supervising Archt., Washington, will soon call for bids to erect quarantine station.

HOSPITALS, SANITARIUMS, ETC.

Fla., Pensacola.—Bureau of Industrial Housing, Otto M. Eldlitz, Director, 613 G St. N. W., Washington, is having plans prepared by Chas. Butler, 56 W. 45th St., New York, for hospital building. (See Government and State.)

Md., Indian Head.—Bureau Yards and Docks, Navy Department, C. W. Parks, Chief, Washington, plans to erect annex to dispensary; specification 3588; cost \$25,000. (See Government and State.)

Okla., Oklahoma City.—Oklahoma County Excise Board is considering appropriating \$35,000 for erecting convalescent hospital; preliminary plans include 2 units; accommodate about 50 people; Oklahoma Tuberculosis Assn., Dr. J. F. Kuhn, City Physician, and others are interested.

Tenn., Nashville.—Government is considering taking over partially-completed Gallaway Hospital and State School for Blind for hospital for wounded men; provide for 1000 beds; Charles H. Brandon, Chrmn. Procurement Board, Nashville, may be addressed.

Tex., Fort Worth.—War Department, Washington, will enlarge base hospital at Camp Bowie; plans include additions to administration building, receiving ward for

contagious diseases, wards for medical and surgical branches; also 3 corridors. (See Government and State.)

MISCELLANEOUS

Ark., Texarkana.—Auditorium.—Rev. P. T. Ramsey, Pastor of State Line Methodist Church, is interested in erection of auditorium adjoining church for religious and civic purposes. (See Churches.)

Ky., Louisville.—Clubhouse.—War Camp Community Service, Geo. Cornet, Starks Bldg., is receiving bids to remodel Athletic Club building for community center; cost \$15,000; O. P. Ward, Archt., Lincoln Trust Bldg., Louisville.

Tenn., Murfreesboro.—Barn.—Andrew L. Todd will erect stock barn to replace structure lately noted damaged by fire; 75x100 ft.; concrete; shingle or composition roof; concrete floor; cost \$3000 to \$4000; construction to begin about Nov. 1.

Tex., Dickinson.—Clubhouse.—Oleander Country Club, Charles Fowler, Prest., will probably rebuild clubhouse noted damaged by fire at loss of \$22,000.

W. Va., Gerrardstown.—Stable and Barn.—W. S. Miller Co. will probably rebuild stable and barn near Gerrardstown noted damaged by fire at loss of several thousand dollars.

RAILWAY STATIONS, SHEDS, ETC.

Ark., De Witt.—St. Louis Southwestern Ry., W. T. Eaton, Chief Engr., Tyler, Tex., will probably rebuild freight depot noted damaged by fire at loss of about \$30,000.

Mo., St. Louis.—Terminal Railroad Assn. will erect 2-story service building and repair two 2-story service buildings; total cost \$12,900.

Mo., Malden.—St. Louis Southwestern Ry., W. T. Eaton, Chief Engr., Tyler, Tex., will erect passenger station; 1 story; frame; concrete foundation, 24x156 ft.; cost \$6500; construction by company's forces.

SCHOOLS

Ark., Pine Bluff.—Branch Normal College will erect 6 buildings to accommodate students of army training corps; cost \$10,000 to \$16,000.

Fla., Gainesville.—Alachua County Board of Public Instruction, E. R. Simmons, Supt., postponed indefinitely erection of school building; 4 rooms; 1 story; frame. (Previously noted.)

Ga., Dublin.—City, Izlie Bashinski, Mayor, has plans by P. E. Dennis, Macon, Ga., for proposed school building; 1 story; 8 rooms; brick and stucco; asphalt composition roof; stove heating; cost \$10,000.

Ga., Jackson.—City, F. M. Trussell, Clerk, will issue \$20,000 refunding bridge and school bonds in February, 1919.

N. C., Salisbury.—Livingstone College Trustees will probably rebuild dormitory noted damaged by fire at loss of several thousand dollars.

Tex., Fort Worth.—War Department, Washington, will construct motor transport corps school at Camp Bowie; plans include mess halls, barracks, lecture-rooms, quarters for officers, etc.; cost of buildings and equipment \$1,500,000. (See Government and State.)

STORES

Ala., Ensley.—Ellis Jewelry Co. will remodel old Bank of Ensley building for store; install beveled mirrors; plate-glass display window; electric fixtures of cut glass; woodwork of mahogany finish, etc.; cost \$10,000.

Ark., Fort Smith.—Mrs. E. T. Echols will probably rebuild business building occupied by W. J. Echols Wholesale Grocery Co., lately noted damaged by fire at estimated loss of \$75,000.

Fla., Jacksonville.—F. W. Long & Co. have permit to remodel building at Harrison and Lorne Sts.; cost \$4000.

Md., Baltimore.—Myer Abramson purchased property at 123 W. Mount Royal Ave. and will remodel; store front, etc.

N. C., Midland.—E. W. Griffin & Son will probably rebuild store building noted damaged by fire at loss of \$3000.

Okla., Pieher.—B. F. Wood will probably erect buildings to replace structures lately noted damaged by fire at loss of \$4000.

Tex., Benchley.—A. T. Towler will probably erect store building to replace structure noted damaged by fire at loss of several thousand dollars.

Tex., Jarrell.—Condra Brothers will erect

BUILDING NEWS

BUILDINGS PROPOSED

APARTMENT-HOUSES

Va., Norfolk.—North Shore Improvement Co., 25 N. Dearborn St., Chicago, will erect 10 buildings in West Ghent Sub-division for residence and apartment-houses; brick construction; tile or slate roof; vapor steam heat; electric lights; cost \$1,100,000; plans and construction by owner. (See Dwellings.)
W. Va., Charleston.—Baker-Myer Realty Co., care of Donald Baker, City National Bank Bldg., will erect building for apartments, etc. (See Theaters.)

ASSOCIATION AND FRATERNAL

Mo., Aberdeen.—National Catholic War Council, Walter Hook, Secy., 30 E. 42d St., New York, will erect dormitory and visitors' home at Aberdeen Proving Grounds for girl workers; accommodate 300.
Mo., Kansas City.—Young Men's Hebrew Assn., H. Passamaneck, Secy., 3123 Tracy Ave., has plans by Greenebaum & Hardy, Scarritt Bldg., Kansas City, for auditorium and gymnasium; 2 stories and basement; 1500 ft.; brick; stone trim; mill construction; cost \$25,000; architects receiving bids. (Lately noted.)
N. C., Wilmington.—Local Chapter of American Red Cross Assn. plans to erect headquarters building; cost \$5000 to \$10,000; George H. Huttaff is interested.

Okla., Tulsa.—Young Women's Christian Assn. will not erect building as lately reported; let contract Sept. 12, 1917, to Universal Construction Co., 15 Daniels Block, Tulsa, to erect association building and dormitory at 5th and Cheyenne Sts.; 85x138 ft.; 2 stories; reinforced concrete and brick; stone trim; composition roof; concrete, wood and tile floors; cost \$148,000; total cost of plumbing, heating and electric wiring, \$44,000; Otis passenger elevator and dumb waiters, \$6500; construction begun Sept. 15, 1917; Laurence K. Birdsall, Archt., Kansas City.

Tex., Weatherford.—Board of Trustees, Pythian Home, Pat M. Neff, Chrmn., will probably repair building noted damaged by fire at loss of \$10,000.
Tex., Camp Bowie.—Jewish Welfare Board will erect building at Camp Bowie near Fort Worth.

BANK AND OFFICE

D. C., Washington.—Lincoln National Bank, Albert S. Gately, Cashier, 7th and 14th Sts. N. W., does not contemplate erecting bank building in near future. (Lately noted.)
Md., Newark.—R. Fulton Powell, John L. Jones and others will organize bank and erect brick building. (Lately noted.)

Tex., Houston.—Houston National Exchange Bank, Henry J. Fox, Prest., is reported to erect building on Main St.

CHURCHES

Ark., Texarkana.—Rev. P. T. Ramsey, Pastor of State Line Methodist Church, is interested in erection of auditorium adjoining church for religious and civic purposes; also include public natatorium and private civic apartments; estimated cost \$50,000.

St. Louis.—Albanian Orthodox Church will repair building; cost \$2500. Address Theodor.

Mo., Govans.—Gregory Memorial Baptist Church is having plans prepared by John Bond, Jr., 1903 N. Calvert St., Baltimore, for building on York Road; stone; following architects invited to estimate: John Waters Building Co., 23 E. Centre St.; Hlicks, Tase & Morris, 106 W. Madison St.; E. Eyring & Co., 808 S. 2d St.; all of Baltimore.

Mo., Curryville.—Rev. R. F. Campbell,

Pastor, has plans by Ernest Schmidt, I. O. O. F. Bldg., Hannibal, Mo., for church to replace structure recently damaged by fire; 1 story; 35x55 ft.; cost \$7000; bids received until Nov. 7.

CITY AND COUNTY

Ky., Louisville.—Engine-houses.—City has tentative plans to erect several engine-houses in annexed territory; construction indefinite. Address Mayor Smith.

Tex., Galveston.—Jail.—John M. Murch, County Auditor, will repair matrons' quarters in jail annex; bids opened Oct. 28.

COURTHOUSES

Va., Princess Anne.—Board of Supervisors of Princess Anne County, John C. Wood, Chrmn., receives bids until Nov. 25 for repairs to Princess Anne Courthouse.

DWELLINGS

Ala., Mobile.—Mobile Shipbuilding Co. plans to erect 200 or more houses for shipyard workers.

Fla., Cocoa.—C. T. Bodefield will not erect residences at present. (Lately noted.)

Md., Baltimore.—Edw. J. Gallagher, Munsey Bldg., will erect 8 dwellings on Collington Ave., 9 on Harford Ave., near Belmont Ave., and 9 on Belmont Ave., near Harford Ave.; brick; 2 stories; about 13-ft. front; asbestos roof; porch fronts; pipeless furnaces in Harford Ave. dwellings; heating or remainder not determined; plans and construction by owner.

Mo., St. Louis.—Missouri Botanical Garden will alter brick dwelling; cost \$2000.

N. C., Monroe.—Bearsden Cotton Mills, M. K. Lee, Prest., will erect 14 additional bungalows in mill village; electric lights, sewerage and bath.

N. C., Charlotte.—Chadwick-Hoskins Mills will erect \$3000 residence; 6 rooms.

Tex., Houston.—Houston Land Corp. will not erect residences as lately reported on account of the war.

Va., Charlottesville.—Royal C. Remick will probably rebuild "Hempstead," residence in Green Mountain section of Albemarle County noted damaged by fire at loss of \$35,000.

Va., Norfolk.—North Shore Improvement Co., 25 N. Dearborn St., Chicago, will erect 100 buildings in West Ghent Sub-division for residence and apartment-houses; brick construction; tile or slate roof; vapor steam heat; electric lights; cost \$1,100,000; plans and construction by owner. (Lately noted.)

Va., Norfolk.—A. Conrad, 724 35th St., will erect 2 dwellings; frame; cost \$4300; construction by owner.

Va., Norfolk.—John R. Lindner will erect \$3000 residence; frame; construction by owner.

Va., Norfolk.—Wm. H. Taylor will erect 3 dwellings in Lamberts Point, near Colley Ave.; frame; 2 stories; cost \$3500 each; construction by owner.

W. Va., Nemours.—Dave Shrader will probably rebuild residence noted damaged by fire.

W. Va., Elm Grove (Br. of Wheeling).—John T. Carter, Cashier of State Bank of Elm Grove, plans to erect number of dwellings in Forbes addition.

GOVERNMENT AND STATE

Fla., Pensacola.—Hospital.—Bureau of Industrial Housing, Otto M. Eldlitz, Director, 613 G St. N. W., Washington, is having plans prepared by Chas. Butler, 56 W. 45th St., New York, for hospital building.

Fla., Pensacola.—Boatshed.—Bureau Yards and Docks, Navy Department, C. W. Parks, Chief, Washington, opened bids to erect wet

In writing to parties mentioned in this department, it will be of advantage to all concerned if the Manufacturers Record is mentioned.

store to replace structure lately noted damaged by fire; 25x100 ft.; brick; gravel roof; concrete floors; construction after war; 2 other buildings will be erected adjoining at same time and probably by same contractor; 25x100 ft. and 50x100 ft., respectively. (Lately noted.)

W. Va., Charleston.—Baker-Myer Realty Co., care of Donald Baker, City National Bank Bldg., will erect building for stores, etc. (See Theaters.)

W. Va., Worthington.—Luigi Lazaris will probably erect store building to replace structure noted damaged by fire at Annabelle.

W. Va., Worthington.—Salvatore Regaluto will probably rebuild store building to replace structure noted damaged by fire at Annabelle.

THEATERS

N. C., Camp Greene.—War Department Commission on Training Camp Activities, Washington, will erect Liberty Theater.

W. Va., Charleston.—Baker-Myer Realty

Co., care of Donald Baker, City National Bank Bldg., will erect building for moving-picture theater, stores and apartments; 3 stories; construction begun by day labor.

WAREHOUSES

Mo., Kansas City.—City Ice Co. is having plans prepared by George Carman, Reliance Bldg., Kansas City, to erect ice-storage building; 50 ft. high, 60x100 ft.; 6000-ton capacity.

Mo., St. Louis.—Best-Clymer Mfg. Co. has plans by H. G. Clymer, Wainwright Bldg., St. Louis, for warehouse; 50.7x190 ft.; concrete, brick and steel; gravel roof; concrete floor; electric lights; concrete sidewalk; cost \$50,000; electric elevator, \$2500; under construction. (Lately noted.)

S. C., Pageland.—People's Gin Co. (J. E. Atherton, owner) will probably rebuild 2 seedhouses and office building noted damaged by fire.

Va., Portsmouth.—Southern Brass Works will erect 1-story brick warehouse; cost \$2000.

theater, hospital for 1000 beds, Y. M. C. A. building, 14 warehouses; accommodate 31,000; erect laundry to cost about \$250,000; expend \$1,000,000 for water-works; W. Z. Williams Co., Macon, has contract for preliminary work; Col. H. E. Eames, Waverly Hotel, Columbus, in charge of general operations; Lockwood, Greene & Co., Engrs., Atlanta and Boston. (Lately noted.)

Ky., Henderson.—Postoffice.—Treasury Department, Jas. A. Wetmore, Acting Supervising Architect, Washington, let contract at \$2445 to Wm. Grohne Co., Joliet, Ill., for repairs to postoffice.

Md., Annapolis.—Storehouse.—Bureau of Yards and Docks, Navy Department, C. W. Parks, Chief, Washington, let contract at \$18,300 to Dorsey & Miller, Equitable Bldg., Baltimore, to erect foundation for storehouse; specification 2464. (Lately noted.)

Md., Colgate.—United States Quartermaster's Department, Washington, let contract to West Construction Co., American Bldg., Baltimore, to erect barracks and warehouse at Colgate Station and Locust Point; fireproof; 160x500 ft.; warehouse connected by platform about 4000 sq. ft. with Colgate Creek dock; estimated cost \$228,650. (Lately noted at Md., Camp Holabird.)

Tex., Fort Crockett.—Camp Extension.—War Department, Washington, let contract to Horton & Horton, Houston, to enlarge Fort Crockett; plans call for 20 units and 200-bed hospital; each unit consisting of 2 barracks, mess hall, kitchen and storehouse; accommodations for 2400 men; cost \$1,000,000. (Lately noted.)

HOSPITALS, SANITARIUMS, ETC.

D. C., Washington.—War Department let contract to George A. Fuller Co., Munsey Bldg., Washington, to alter building at 19th and B Sts. N. W. for hospital; construction begun.

Ga., Columbus.—War Dept., Washington, let contract for camp, including 1000-bed hospital, etc. (See Government and State.)

Tex., Fort Worth.—War Department, Washington, let contract to Horton & Horton, Houston, to enlarge Fort Crockett; erect 200-bed hospital, etc. (See Government and State.)

W. Va., Huntington.—Chesapeake & Ohio Ry., F. I. Cabell, Chief Engr., Richmond, Va., let contract to C. W. Harrer, 425 5th St., Huntington, to erect hospital; 40x100 ft.; 3 stories; brick; wood and terrazzo floors; Barrett roof; cost \$50,000; steam heat, \$7500; passenger elevator, \$3500; conduit wiring; Chas. M. Robinson, Archt., Richmond. Address contractor. (Lately noted.)

MISCELLANEOUS

Ga., Columbus.—Clubhouse.—War Dept., Washington, let contract to erect camp at Fort Benning, including clubhouse, etc. (See Government and State.)

Md., Baltimore.—Restroom, etc.—Baltimore Car & Foundry Co. let contract to D. C. McAleer & Bro., 15 W. Fayette St., Baltimore, to erect restroom and construct foundation; cost \$10,000. (Previously noted.)

RAILWAY STATIONS, SHEDS, ETC.

W. Va., Beckley.—Chesapeake & Ohio Ry., F. I. Cabell, Chief Engr., Richmond, let contract to J. O. Freeman, Beckley, to erect

passenger station; 1 story; 75x19 ft.; brick and concrete. (Previously noted.)

W. Va., Huntington.—Chesapeake & Ohio Ry., F. I. Cabell, Chief Engr., Richmond, Va., let contract to C. W. Harrer, 425 5th St., Huntington, to erect lately-noted hospital; cost \$50,000; plans by Chas. M. Robinson, Richmond; also let contract to C. W. Harrer to erect Y. M. C. A. building at Cane Fork; cost \$35,000. (See Hospitals and Association and Fraternal.)

SCHOOLS

D. C., Washington.—District Comm. Room 511 District Bldg., let contract to L. & Burnham, Munsey Bldg., Washington, to furnish and erect 20 portable school buildings at various sites; 25x45 ft. each; frame panels; composition roof; wood panel floor; total cost \$67,500; portable ventilating machines, \$10,000; Snowden Ashford, Archt., District Bldg., Washington. (Lately noted.)

Fla., Cutler.—War Department, Washington, let contract to St. John's Construction Co., Miami, to erect 2 additional units of army aero gunnery school near Miami; \$6000 appropriation. (See Government and State.)

Okl., Luther.—Oklahoma County Comm. let contract to C. W. Van Vactor to erect school; 2 stories; brick; 52x56 ft.; concrete floor in basement; other floors, pine; Frank W. Brown, Archt., 2309 Exchange Ave., Oklahoma City. (Previously noted.)

Okl., Oklahoma City.—School Board is reported to have let contract to Campbell Price, 611 Majestic Bldg., Oklahoma City, to erect Woodrow Wilson school at 24th and Walker Sts.; 2 stories; 50x100 ft.; brick and stone and reinforced concrete; cost \$100,000. (Lately noted.)

Okl., Stroud.—School Dist. No. 54, M. Hadley, Clerk, has plans by and let contract to Stewart & Wilderson, Oklahoma City, to erect school building; 60x100 ft.; wing 60x30 ft. for auditorium; brick; Barrett specification roof; cement and terrazzo floors; cost \$45,000; steam heat, \$5000; piping from city plant; construction begun May 15. (Previously noted.)

THEATERS

Ga., Columbus.—War Dept., Washington, let contract to erect camp at Fort Benning, including theater, etc. (See Government and State.)

WAREHOUSES

Ga., Columbus.—War Dept., Washington, let contract for camp at Fort Benning, including 14 warehouses, etc. (See Government and State.)

D. C., Washington.—W. W. Hall let contract to J. G. Morris to erect warehouse 1039 F and 1941 20th Sts.; cost \$3500; J. McIntyre, Archt., 1421 33d St. N. W., Washington.

Md., Colgate.—United States Quartermaster's Department, Washington, let contract to West Construction Co., American Bldg., Baltimore, to erect warehouse and barn at Colgate Station and Locust Point; fireproof; 160x500 ft.; warehouse connected by platform about 4000 sq. ft. with Colgate Creek dock. (See Government and State.)

Md., Baltimore.—Continental Can Co., Talbott, Mgr., Highlandtown, let contract to Hicks, Tase & Norris, 106 Madison St., Baltimore, to erect warehouse at Fleet and Clinton Sts.; 2 stories; cost \$10,000.

MACHINERY, PROPOSALS AND SUPPLIES WANTED

"WANTS"

Acids, Chemicals, etc.—Navy Department, Bureau Supplies and Accounts, No. 633, Washington.—Bids to furnish 105,000 lbs. chloride ammonium, Schedule 1990; 41,500 lbs. silver lead facing, Schedule 1985; both for various deliveries; 10,000 lbs. bituminous, sea-coal facing, and 4000 lbs. foundry flour, Schedule 1955, delivery New Orleans; 1800 lbs. hydrofluoric acid, Schedule 1989, delivery Puget Sound, Washington; 10,000 lbs. hydrofluoric acid, muriatic acid, Schedule 1989; 4075 lbs. salicylic acid, Schedule 1989; sal ammoniac, Schedule 1983; all various deliveries; 20,000 lbs. carborundum sand, 300-lb. bags, Schedule 1955, delivery Philadelphia.

Agricultural Implements and Machinery, etc.—Farmers' Co-operative Assn., J. R.

Cherry, Mgr., Dublin, Ga.—Dealers' prices on farm implements and machinery, including systems, sewerage systems, gas engines, etc. (Conducts co-operative store.)

Automobiles.—A. J. Georgopoulos, Merchant and Commission Agent, Box 100, Alexandria, Egypt.—Correspondence with manufacturers of automobiles. (See Soap, Bicycles, etc.)

Automobile Accessories.—Oklahoma Garage & Sales Co., 200 E. Broadway, Oklahoma.—Prices on automobile accessories. Bicycles.—S. N. Simonsen & Co., 1111 Farmington, 11, Copenhagen K, Denmark.—Correspondence with export agents and commission agencies in New York, bicycles, etc. (See Metals, etc.) Boats (Steel; Tow).—United States

BUILDING CONTRACTS AWARDED

APARTMENT-HOUSES

erect 3-story apartment-house; frame; 12 suites; cost \$11,000; E. W. Clark, Contr., St. Petersburg.

ASSOCIATION AND FRATERNAL

Ala., Montgomery.—National War Work Council, Young Women's Christian Assn., let contract to Southern Ferro-Concrete Co., Atlanta, to erect 3 hostess-houses, one each at Camp Sheridan, Wrights Field and Taylor Field; frame; slate-coated asphalt roof; wood floors; heating at Camp Sheridan not determined; furnaces at Wrights Field and Taylor Field; cost \$25,000, \$16,000 and \$14,000; Katherine Cothel Budd, Archt., 527 Fifth Ave., New York. (Lately noted.)

D. C., Washington.—Knights of Columbus let contract to Jas. J. Galvin to remodel hall at 606 E St. N. W. for war workers; cost \$10,663; Milburn, Helster & Co., Archts., Union Savings Bank Bldg., Washington.

Ga., Columbus.—War Dept., Washington, let contract for camp at Fort Benning, including Y. M. C. A. building, etc. (See Government and State.)

Va., Berkeley (P. O. Norfolk).—Memorial Church let contract to E. R. Parron to erect building; 1 story; cost \$3500.

W. Va., Huntington.—Chesapeake & Ohio Ry., F. I. Cabell, Chief Engr., Richmond, Va., let contract to C. W. Harrer, 425 5th St., Huntington, to erect Y. M. C. A. building at Cane Fork; 36x34 ft.; 2 stories; brick; fireproof; pine floors; slate roof; steam heat; shower baths; cost \$35,000.

BANK AND OFFICE

N. C., Winston-Salem.—Wachovia Bank & Trust Co. let contract at \$13,950 to York Safe & Lock Co., York, Pa., for vault work in bank and office building; also let contract at \$28,370 to Wade Manufacturing Co., Charlotte, N. C., for fixtures; Fogle Bros. Co., Winston-Salem, contractor for superstructure, and Barber & Ross, 11th and G Sts. N. W., Washington, D. C., for steel frame; Milburn, Helster & Co., Archts., Union Savings Bank Bldg., Washington, D. C. (Previously noted.)

CHURCHES

La., Algiers (Station A, New Orleans).—Providence Baptist Church, Rev. John Tomer, Pastor, 631 Newton St., has plans by and let contract to Adolph Williams, 1632 Vallet St., New Orleans, to erect building 30x75 ft.; frame; waterproof paper roof; wood floors; cost \$2200. Address Rev. John Tomer at above address. (Lately noted.)

S. C., Rock Hill.—Sellers & Padgett, Rock Hill, general contractors to erect First Baptist Church building, let contract for roofing to C. F. Shuman Co., Charlotte, N. C.; plans by Willard G. Rodgers, Charlotte, call for brick and stone building; frame interior; steel supports; slate and composition roof; joist floor construction; steam heat; electric lights; cement sidewalks. (Other contracts lately noted.)

CITY AND COUNTY

Tex., Fort Worth.—Jail Cells.—Tarrant County Commrs. let contract at \$11,985 to

Southern Structural Steel Co., San Antonio, to remove, enlarge and install old jail cells in new building.

DWELLINGS

Mo., Kansas City.—W. F. Ingham let contract to Long Construction Co., Rialto Bldg., Kansas City, to erect proposed residence; 2 stories and basement; 32x72 ft.; cost \$25,000; Shepard, Farrar & Wiser, Archts., R. A. Long Bldg., Kansas City.

Va., Norfolk.—Griffin Brothers, Arcade Bldg., will erect 2 residences; frame; 22x30 ft.; cement tile roofing; hot-air heat; cost \$4500 each; construction by owners; all sub-contracts let.

Va., Norfolk.—Simon Salisbury let contract to J. M. Echols, 1517 Calvert St., Norfolk, to erect dwelling; 2 stories; cost \$5500.

Va., Norfolk.—W. W. Seeley, 1251 W. 2d St., let contract to J. H. Primmer, 1256 W. 26th St., Norfolk, to erect 2 dwellings, 1422 W. 27th St. and 1326 W. 41st St.; 20x40 ft. each; frame; Neponset roofing; rift pine floors; stoves; cost about \$2000 each; electric lighting, \$90 each; plans by owner. (See Machinery Wanted—Building Material.)

GOVERNMENT AND STATE

Fla., Cutler.—Aero Gunnery School.—War Department, Washington, let contract to St. John's Construction Co., Miami, to erect 2 additional units for army aero gunnery school near Miami; \$650,000 appropriation. (Lately noted.)

D. C., Washington.—Hospital.—War Department let contract to George A. Fuller Co., Munsey Bldg., Washington, to alter building at 19th and B Sts. N. W. for hospital. (See Hospitals.)

Fla., Key West.—Naval Air Station.—Bureau of Yards and Docks, Navy Department, C. W. Parks, Chief, Washington, let contract to South Florida Contracting & Engineering Co., Key West, to erect 4 buildings at naval air station; frame; rubberoid roofing; concrete floors; no heating or lighting; cost \$75,000; plans by Government. Address contractor. (Lately noted.)

Fla., Pensacola.—Mess Hall.—Bureau of Yards and Docks, Navy Department, C. W. Parks, Chief, let contract to Everhardt Construction Co., Salina, Kan., to erect mess hall at Pensacola and latrine and 3 barrack buildings at Santa Rosa Island. (See Fla., Santa Rosa Island.)

Fla., Santa Rosa Island.—Barracks, Latrine, etc.—Bureau of Yards and Docks, Navy Department, C. W. Parks, Washington, let contract at \$39,000 to Everhardt Construction Co., Salina, Kan., to erect latrine and 3 barrack buildings at Santa Rosa Island and mess hall at Pensacola; specification 3470. (Lately noted.)

Fla., Tampa.—Rest Station.—Bureau of Yards and Docks, Navy Department, C. W. Parks, Chief, Washington, let contract at \$5300 to Logan Brothers, Tampa, to erect rest station; specification 3272. (Previously noted.)

Ga., Columbus.—Camp.—War Department, Washington, let contract to Selden-Breck Construction Co., Fullerton Bldg., St. Louis, to construct camp for infantry training school at Fort Benning, near Columbus; plans include 1200 buildings, 500 barrack buildings and 45 storehouses, clubhouse,

Capital and Surplus
\$4,000,000



Total Resources
\$38,000,000

The Largest National Bank in the South

Liberal Accommodations to Manufacturing Corporations

**MERCHANTS-MECHANICS
FIRST NATIONAL BANK
OF BALTIMORE**

THE NATIONAL EXCHANGE BANK OF BALTIMORE, MD.

Hopkins Place, Redwood and Liberty Sts.
Capital \$1,500,000.
Surplus \$850,000.

OFFICERS.
WALDO NEWCOMER, President.
SUMMERFIELD BALDWIN, Vice-Pres.
CLINTON G. MORGAN, Cashier.
JOSEPH W. LEFFLER, Asst. Cashier.
WILLIAM R. WEBB, Asst. Cashier.
Accounts of Mercantile Firms, Corporations, Banks, Bankers and Individuals Invited.

Maryland Trust Company BALTIMORE

Capital \$1,000,000
TRANSACTS A GENERAL TRUST AND
BANKING BUSINESS
Correspondence and interviews
invited.

Lithographer, Engraver and Steel Die Embosser

Stationery Especially Designed for Your Business
Letters are worth more now; have them better
ROBERTS & SON, Birmingham, Ala.
Stationers and Office Outfitters.

WE BUY BONDS CITY, COUNTY SCHOOL and DISTRICT

Correspondence invited from Officials and Contractors
SIDNEY SPITZER & CO. New York Cincinnati Toledo
Southern Branch: BELL BUILDING, MONTGOMERY, ALA.

CHARLES F. HOLDEN CO.

Insurance Agents and Brokers
110 Washington St. ALEXANDRIA, VA.
Southern Bldg. Times Dispatch Bldg.
Washington, D. C. RICHMOND, VA.
Represented in
New York, N. Y.; Roanoke, Va.

FOR SALE Timber, Coal, Iron, Ranch and other Properties

Southern States. West Indies. Mexico.
GEO. B. EDWARDS
(Broker)
22 Broadway NEW YORK, N. Y.
Confidential Negotiation. Investigations.
Settlements and Purchases of Property.

Philadelphia Detroit Dallas **Powell, Garard & Co.** 39 South La Salle St. Chicago

We buy Southern Municipal Bonds
(County, City, School, Road and Drainage District.)

JOHN NUVEEN & CO.

First National Bank Building, CHICAGO
We purchase SCHOOL, COUNTY and
MUNICIPAL BONDS. Southern Municipal
Bonds a Specialty.
Write us if you have bonds for sale.

First National Bank

RICHMOND, VIRGINIA
Capital and Surplus \$3,000,000
JNO. M. MILLER, Jr., President
W. M. ADDISON, Vice-Pres. & Cashier
CHAS. R. BURNETT, Vice-President

THE BANK OF ALABAMA

ENSLEY, ALABAMA
R. A. TERRELL - President
J. W. MINOR - Vice-President
FOSTER HAMILTON Cashier
We Solicit Your Business

Write us about investment in Birmingham
Real Estate.

Jemison Real Estate & Insurance Co.

Real Estate
General Insurance, Loans
211 N. Twentieth St. BIRMINGHAM, ALA.

D. H. BURGESS & CO.

Exporters Importers
P. O. Box 115 PETERSBURG, VA.
Write us your needs in all
lines of business

FINANCIAL NEWS

NEW FINANCIAL CORPORATIONS

Ala., Montgomery.—Mead & Charles Co., capital \$300,000, inceptd. by A. M. Mead, T. T. Charles and R. M. Mead.

Ark., Little Rock.—Citizens' Investment & Security Co. has merged with the Peoples' Savings Bank.

Ga., Waycross.—Commercial Bank, capital \$50,000, has begun business. L. O. Benton, Monticello, Pres.; J. M. Norman, Cash. (Lately noted.)

Ky., Covington.—General Building Association, capital \$3,000,000, inceptd.; representing consolidation of General Building Association No. 2, Permanent of Covington and Cottage Building Association No. 2, Covington.

Ky., Frankfort.—People's State Bank & Building Assn., capital \$100,000, inceptd. by D. D. Smith, George Kalmhuber and Eli H. Brown.

Ky., Highland Park, P. O. Louisville.—People's Bank of Highland Park chartered; capital \$15,000; inceptrs., G. P. Wable, E. Morris and E. H. Smith.

La., New Roads.—Pointe Coupee Trust & Savings Bank inceptd., capital \$60,000. Arthur B. La Cour, Pres., La Cour, La.; J. G. Morgan, New Roads, and Muniford Phillips, Lakeland, La., V.-Ps.; J. A. Langlois, Cash. Business began Sept. 5. (Lately noted under Pointe Coupee.)

Md., Newark.—A new bank is chartered with \$12,500 capital and \$2500 surplus. Incorporators: R. S. Powell, John L. Mason,

A. C. Holloway and others. Business is begin in about 90 days.

N. C., Winston-Salem.—The North Carolina Merchants Mutual Fire Insurance Co. being organized under the auspices of the insurance committee, and, officers of the Merchants' Association of North Carolina, among whom are J. Paul Leonard of Winston-Salem; J. Frank Morris, Winston-Salem; R. B. Peters, Tarboro. To answer an estimated stock, a fund of not less than \$25,000 of Liberty Bonds and other securities will be deposited with the Treasurer of the Bank of North Carolina.

S. C., Aiken.—Citizens' Bank, capital \$100,000, is organized with J. M. Holley, Pres., A. M. Denbow and W. C. Plunkett, V. P., J. M. Holley, Secy.-Treas.

Va., Alexandria.—Equitable Investment Co., authorized capital \$25,000, is being organized with Frank B. Hoag, Pres., and William W. Boyd, Secy.-Treas.

Va., Louisa.—Bank of Louisa and Farmers and Merchants' Bank are reported to have consolidated under the name of former institution.

Va., Portsmouth.—American National Bank, capital \$250,000, expects to begin business about Jan. 2 with H. A. V. Parker, Pres., Chas. F. Harper, C. C. Hall and Isaac V. V.-Ps.; Frank D. Lawrence, Cash.; C. Allen, Asst. Cash., and Geo. L. Rouse, General Counsel.

NEW SECURITIES

Ark., Van Buren.—(Levee).—Crawford County Levee Dist. Comms. have sold Wm. R. Compton & Co., St. Louis, \$25,000 bonds.

Fla., Crescent City.—(Light).—City sold 25 sold to the Bank of Crescent City \$25,000 the \$10,000 of 6 per cent. 5-14-year \$500 denomination bonds offered on that date. P. Bills, S. M. La Bree and B. F. Purcell, Trustees.

Fla., Lake City.—(Highway).—Columbia County will probably soon have valid \$400,000 of bonds, and steps will then be taken to place them on the market. Address County Comms.

Fla., Moore Haven.—(Street, Water, Sewer, etc.).—City sold on Oct. 25 to G. B. Sapp & Co., Jacksonville, Fla., \$30,000 of 1 per cent. \$500 denomination bonds; C. C. Kline, Town Clerk.

Ky., Paducah.—(Refunding).—City sold \$515 premium \$70,000 of 5 per cent. bonds to the City National Bank, Paducah.

La., Jennings.—(Road).—Jefferson Parish is reported to have recently sold \$150,000 of bonds Pelican Road Dist. No. 1. Address County Comms.

La., Winnfield.—Winn Parish recently sold to J. L. Arlitt, Austin, Tex., \$40,000 of 1 per cent. 1-10-year bonds.

Miss., Pascagoula.—(Paving, Sewerage).—City voted \$115,000 of bonds. It is stated that arrangements for sale of bonds have already been made at par and accrued interest. Address The Mayor.

Miss., Senatobia.—(School).—Tate County Comms. recently sold \$17,000 of 6 per cent.



This bank offers a special service to Southern brokers, manufacturers, shippers and banks for the collection of drafts, particularly B/L drafts on Chicago and other Northern points. Please write us for particulars.

We also solicit correspondence and interviews with high-grade Southern concerns regarding a direct Chicago banking connection.

UNION TRUST COMPANY CHICAGO

Capital and Surplus, \$3,000,000; Deposits, \$34,000,000

Established 1869

Banks and Bankers

Write us now for our
special offer on

Pocket Check Books

We are making a wonderful proposition, and our salesmen cannot reach all of you.

Young & Selden Co.

BANK STATIONERS BALTIMORE, MD.

Lithographing, Printing, Envelopes
Blank Book Making, Book Binding
Letter Heads, Office Supplies
Steel Die Work

Delaware Corporations
Forms Law and Pointers

Estimates of Cost furnished without cost

Delaware Registration Trust Co.
900 MARKET STREET
Wilmington, Del.

J. Ernest Smith, President & Gen. Counsel
Chas. Warner Smith, Vice-President
Harry W. Davis, Secretary and Treasurer

New War Revenue Bill

We have in course of preparation a booklet giving in convenient form a digest of the provisions of the New War Revenue Bill, including comparisons with the Act of 1917, Income Tax table, War Profits Tax example, and other interesting data and statistics.

This booklet will be ready for distribution within a few days after the bill has been signed by the President. As the edition will be limited, we suggest that those interested write at once for a complimentary copy.

Ask for Booklet AG-40

A. B. Leach & Co., Inc.

Investment Securities

62 Cedar Street, New York

Chicago Philadelphia Boston Buffalo
Minneapolis Baltimore Pittsburgh Cleveland

Stepping Stones—not Stumbling Blocks

Every condition war imposes on business has its compensating advantage. Babson's Reports give you the information that enables you to turn apparent stumbling blocks into stepping stones.

Avoid worry. Cease depending on rumors or luck. Recognize that all action is followed by equal reaction. Work with a definite policy based on fundamental statistics.

Particulars sent free.
Write to Dept. B-15 of

Babson's Statistical Organization
Compiling Block
Largest Organization of its Character in the World

denomination bonds to Wm. R. Compton Investment Co., St. Louis.

Miss. Yazoo City—(Improvement).—City, G. O. Olden, City Clerk, sold at \$23,051, to Wm. R. Compton Investment Co., St. Louis, \$23,000 of 1-20-year bonds.

N. C. Asheville—(Funding).—City, F. L. Chandler, City Treas., asks bids until noon Nov. 14 for \$64,000 of not exceeding 6 per cent. bonds.

N. C. Fremont—(Public Improvement).—Board of Aldermen, L. H. Mumford, Clerk, asks bids until 3 P. M. Nov. 15 for \$25,000 of 5 per cent. \$1000 denomination bonds, dated Sept. 15, 1918, and maturing 1919 to 1933, inclusive. Further particulars will be found in the Proposals Department.

N. C. Murphy—(Improvement).—Town Treas. asks for sale \$25,000 of 6 per cent. 30-year bonds for hydro-electric plant. T. J. Hill, Mayor. Further particulars will be found in the Proposals Department.

Tex. Abilene—(Road).—Taylor County Commrs., E. N. Overshiner, Judge, asks bids until noon Nov. 11 for the following 5 per cent. bonds: \$25,000 of 1-20-year serial; \$25,000 of 5-25-year serial, optional; \$15,000 of 1-20-year serial, and \$15,000 of 1-30-year serial.

Tex. Edinburg—(School).—Hidalgo County has had approved by Atty.-Genl. \$5000 of 5 per cent. 10-20-year bonds School Dist. No. 6. Address County Commrs.

Tex. Fort Bend—(Drainage).—Fort Bend Drainage Dist. No. 3 has had approved by Atty.-Genl. \$3000 of 5 per cent. 10-20-year bonds. Address Board of Commrs.

Tex. Matador—(School).—Motley County has had approved by Atty.-Genl. \$3000 of 5 per cent. 10-20-year bonds School Dist. No. 4. Address County Commrs.

Tex. Oakville—(Road).—Live Oak County has voted \$50,000 of bonds for road between Paget Sound and Gulf. W. W. Caves, County Judge.

Tex. Vernon—(Street, etc.).—City voted \$50,000 of 5 per cent. 40-year \$500 denomination bonds, dated May 26, 1918. As soon as approved, bonds will be offered. Harry Mason, Mayor.

FINANCIAL NOTES

Citizens' National Bank, Orange, Va., increased capital from \$60,000 to \$75,000.

Marion National Bank, Marion, Va., increased capital from \$40,000 to \$80,000.

Two interesting and convenient folders, one containing a comparative statement of outstanding Liberty bond issues and the other describing the effect of the new Federal income tax on the income of other bonds held by individual investors have been issued by Halsey, Stuart & Co., 209 S. La Salle St., Chicago.

J. A. Lewis, recently appointed a vice-president of the Irving National Bank, New York, assumed his new duties on November 4. He was formerly vice-president and cashier of the National Bank of Commerce, St. Louis.

Book Review.

Speaking Frankly to Bank Presidents. By Harvey A. Blodgett. 1918. Harvey Blodgett Company, St. Paul and New York.

This little book of 24 pages presents the question of bank publicity graphically along the lines carefully considered by the author, who points out the fact that bankers must prepare now for the opportunities which will present themselves when the war has terminated, and he warns them against over-conservatism. He wants banks to begin a propaganda which will make thrift permanent, increasing their deposits in number of accounts and in volume, the latter by the systematic building up of balances of accounts already existing. It is an exceedingly interesting and instructive presentation of a good banking argument, and will well repay reading.

BLACK & COMPANY Certified Public Accountants
(WILMER BLACK, C. P. A.) Suite 905 Garrett Bldg.
Member American Institute of Accountants Baltimore, Md.

THE HAMMOND HOTELS
THE HOTEL ESSEX
BOSTON, MASS.
Opposite South Terminal Station
EUROPEAN PLAN. RATES MODERATE. ABSOLUTELY FIREPROOF.
Free Transfer Baggage from and to Station.
Terminal of Trains from South and West.
DAVID REED, Manager

HIGHLAND PINES INN
Open From December 1st to May 1st
Superb Climate. Not too cold or yet too hot. The resort with the just-right weather.
Accessibility. Only a day or night from New York or Florida on the splendidly equipped trains of the Seaboard Air Line Railway.
Extensive and delightful views in all directions. Adjacent to 18-hole course of Southern Pines Country Club. Good automobile roads. Excellent hunting. Consumptives not received.
HIGHLAND PINES INN
Weymouth Heights, Southern Pines, N. C.
"JUST FAR ENOUGH SOUTH"
is near several army camps, two of which are:
CAMP BRAGG—A brigade artillery camp with remount station near Fayetteville. This camp will accommodate 54,000.
CAMP GREEN—A guard camp, Base Hospital Depot, near Charlotte, N. C. This camp will accommodate 40,000.
A. I. CRAMER, M. H. TURNER, Proprietors

We Finance
Electric Light, Power and Street Railway Enterprises
with Records of Established Earnings
We Offer
Bankers and Investment Dealers
Proven Public Utility Securities
Correspondence Solicited
Electric Bond and Share Company
(Paid-up Capital and Surplus, \$21,000,000)
71 Broadway New York

LOANS MADE TO STATES, CITIES, COUNTIES, ETC.
Also Entire Issues of Bonds of Successful
Industrials Purchased
Largest Capital and Surplus of Any Financial Institution in Maryland or
Any Southern State.
Established 1884 Resources \$21,000,000
MERCANTILE TRUST and DEPOSIT CO.
OF BALTIMORE
A. H. S. POST, President F. G. BOYCE, Jr., Vice-President

**MUNICIPAL AND CORPORATION
BONDS PURCHASED**
Correspondence invited from officers of Municipalities and
from well established industrial corporations contemplating
new financing.
HORNBLOWER & WEEKS
INVESTMENT SECURITIES
42 Broadway New York
BOSTON CHICAGO DETROIT PROVIDENCE PORTLAND, ME
Established 1888

MR. CONTRACTOR
If you have any bonds or warrants to sell, or know where you can obtain work
and take same in payment, kindly advise, so that we can negotiate with you for
their purchase. We have representatives in Birmingham, Alabama, Tampa,
Florida and New Orleans, Louisiana. Correspondence solicited.
W. L. SLAYTON & CO. Toledo, Ohio

ASC SERVICE TO MANUFACTURERS,
CONTRACTORS and
BUSINESS PEOPLE
We will represent you in Washington and under-
take the sale of your products to the Government
and contractors for the Government.
AGENCY SERVICE CORPORATION
Suite 403 Maryland Building 1410 H St. N. W., Washington, D. C.

Wm. F. Bockmiller, Pres. John G. Hullet, Secy
BALTIMORE OFFICE SUPPLY CO., Inc.
641 COLUMBIA AVE., BALTIMORE, MD.
Manufacturers of
Steel Die Embossed Stationery
Write for Samples and Prices

Strayer's Business College, Inc.
Charles and Fayette Sts. Ninth and F Sts. N. W.
Baltimore, Md. Washington, D. C.
Fully accredited by the National Association of Accredited Commer-
cial Schools. Teaching latest methods in Shorthand, Typewriting and
Commercial Subjects. Departments headed by Degree Teachers.
The Government needs TEN THOUSAND STENOGRAPHERS, and a
representative of the Civil Service Commission visited Strayer's Busi-
ness College recently and urged us to provide as many as possible.
This is YOUR opportunity. Classes now open. Day and Night School
all the year. Enroll at once. Write us today.

MURPHY'S HOTEL Richmond, Va.
Virginia's largest and Richmond's most centrally located Hotel.
Every car line in the City passes Murphy's.
Rooms single and en suite.
Railroad tickets sold and baggage checked at Hotel.
Main Hotel and Grace Street Annex fireproof. Rates \$1.00 and Up
JAMES T. DISNEY, Manager

INDUSTRIAL NEWS OF INTEREST

Elected Chairman.

Roger C. Sullivan has been elected chairman of the board of directors of the Independent Pneumatic Tool Co., Chicago, and also a member of the executive committee, to fill vacancies caused by the death of John P. Hopkins. This was done at a recent special meeting of the board, when Mr. Sullivan was appointed a director.

Steel Casting Molding Machine.

A power-drive steel-casting molding machine, invented and patented by O. B. Ramp, Cocoa, Fla., is described as "the best machine that can be made for certain classes of work." It is further said to offer producing possibilities and easy operation "at a minimum cost for operation by waste power from the press."

District Sales Manager Appointed.

A. M. Brown has been appointed district manager of sales for the Chicago Pneumatic Tool Co. at 1740 Chestnut street, Philadelphia, succeeding G. A. Barden, who remains in that city as sales representative for the company. Mr. Brown was previously for some time in the New York offices of the company as assistant manager in the compressor sales division.

To Erect Storage Building.

MacGovern & Company, Inc., dealers in power machinery at 114 Liberty St., New York, contemplate erecting a fireproof storage building at their Linden (N. J.) property, but the contract has not yet been let, nor has any material been purchased for its construction. The building will be 150 feet long and 48 feet wide, and will be equipped with a travelling crane of from five to ten tons capacity.

Zelnicker Officers Appointed.

The Walter A. Zelnicker Supply Co., St. Louis, Mo., announces the appointment of R. H. Wilson as assistant to the president, with office in that city. Mr. Wilson has been with the company for some years, and lately as its representative at Houston, Tex., where he is succeeded by E. O. Griffin, well known in railroad circles of the Southwest for 20 years as storekeeper and assistant general manager of the International & Great Northern Railroad, and more recently as assistant to the president of the St. Louis Southwestern Railway, in charge of purchases.

Interesting Two-Ton Electric Furnace.

An electric furnace whose main product is nichrome, the well-known high-temperature-resisting alloy, was recently installed at the plant of the Driver-Harris Company, Harrison, N. J. This furnace is of special interest because of its electrical equipment, which is an excellent example of modern practice. Alloys of various characters are also made in the furnace. It is of the Heroult arc type, featured with automatic regulation, and it has a capacity of two tons. As the charge melts down, pieces of metal fall between the electrodes and establish short circuits. Generally these short circuits are only momentary, as the fragments causing them are promptly melted, but occasionally they persist, and then the automatic regulator draws up the electrodes until they are clear. The regulator then brings the electrodes down again, and, if the arc has been broken, it is re-established. Power is a two-phase, 60-cycle, 2200-volt current from the lines of the Public Service Electric Co. There is provision for low voltage and overload protection. The coils are very firmly braced and are capable of withstanding momentary overloads fifteen times greater than the normal load. The Thury regulator automatically maintains an approximately constant current at the furnace electrodes. All of the equipment consists of standard Westinghouse furnace apparatus.

ing momentary overloads fifteen times greater than the normal load. The Thury regulator automatically maintains an approximately constant current at the furnace electrodes. All of the equipment consists of standard Westinghouse furnace apparatus.

Simplex Farm Light and Water System.

An entirely new type of two-cycle engine has been invented by the engineers of the Simplex Farm Light & Pump Co., 1117 Healey Building, Atlanta, Ga., to be used in connection with its electric lighting and electric pump-water supply system for farms, gins, sawmills, factories, small towns, etc.—in fact, for all isolated building service. The engine is the result of three years' experience in the use of other types of engines in connection with this light and water system. It is of very few moving parts, so that wear is reduced to a minimum. The system was invented by Egbert Allen, formerly superintendent of the Western Electric Co., and Rollin W. Hutchinson, Jr., formerly designing engineer of the Westinghouse Electric & Manufacturing Co., and both of them natives of the South. The standard 1 K. W. plant weighs only 145 pounds as compared with some other plants of like capacity weighing from 325 to 900 pounds. The pump will operate to 150 feet depth. The weekly gasoline consumption of the engine is said to be extremely low. Mr. Hutchinson is president and general manager; Mr. Allen is vice-president and chief engineer. Gale K. Riley is secretary and treasurer.

Enlarged Organization in New Offices.

Ricketts & Company, Inc., 280 Madison Ave., New York, announce their removal from their old offices, at 80 Maiden Lane, to the preceding address, this change being compelled to meet the requirements of their increased business and their enlarged staff. President Pierre de P. Ricketts further says that by associating with them Charles E. Wagstaffe Bateson, E.M., M.A., and Dr. M. L. Hamlin, M.A., Ph.D., and by securing the services of T. A. Shegog, A.R.C.S.I., F.I.C., formerly assistant professor of chemistry and metallurgy at the Royal College of Science, Dublin, and professor of chemistry and metallurgy for the County of Monmouth, they have placed themselves in a position not only to carry on their mining and metallurgical consulting business on a large scale, but to handle the most varied organic and inorganic manufacturing problems and related chemical work. President Ricketts, who is an A.M., and also Ph.D., was formerly assistant in mineralogy and assaying, later instructor and professor of analytical chemistry and assaying at Columbia University. He is a fellow of the A. A. A. S., and also a member of the New York Academy of Sciences, the American Institute of Mining Engineers and the Chemical Society. Mr. Bateson, who is vice-president, is a native of New Orleans. He graduated from the University of the South, and also received degrees from the Schools of Mines and Pure Science, Columbia University. He is a consultant on mining and geological work, and consulting manufacturing engineer. He is vice-president of the Josephine Mills and the Lebanon Textile Co., and president of the Standard Knitting Mills Co. Dr. Hamlin, after graduating at Amherst, studied chemistry at the University of Strassburg, Germany, and also received degrees from Columbia University. He is a research chemist for the General Bakelite Co., and chief chemist of the picric acid and dye plants of the Butterworth-Judson Corporation, and is the author of numerous scientific and technical articles. He is a member of the A. A. A. S., the American Chemical Society and the Chemists' Club. The new organization will pay especial attention to the development of Southern mineral resources.

TRADE LITERATURE

Batteries for Electric Vehicles.

The "Exide," "Hycap-Exide" and "Tudor Exide" batteries for electric vehicles are listed in a new edition of Section V of Price-List V which has just been issued by the Electric Storage Battery Co., Section AR, second edition, covering the "Chloride Accumulator" and "Tudor Accumulator" is also a recent revision of their catalogue series and lists these batteries, which are extensively used in various classes of storage battery service. Copies of these publications will be furnished upon application to any of the sales offices of the company or to its general offices in Philadelphia.

Chemical Research, Etc.

Bearing the title of "Chemistry in Our Age," Arthur D. Little, Inc., 30 Charles Street, Cambridge, Mass., has issued an excellent book describing and illustrating the corporation's industrial research laboratories. The building which they occupy is a modern structure consisting of three stories and ample equipment, with light on all sides. Under the heading of "What We Do" the book says: "We solve problems in manufacturing, we conduct industrial research and we make chemical analyses. . . . We examine into and report upon the merits of new industrial products," etc. The management of corporations making chemicals, chemical engineering, chemical advice and counsel are included in the activities of the establishment. Consulting work is also a feature. The book is well prepared.

Iron Culverts in Cantonment and Road Work.

Brilliant with our national colors on the cover page, "Somewhere in the U. S. A." sent out from the offices of the Dixie Culvert & Metal Co., Atlanta, Ga.; Jacksonville, Fla., and Little Rock, Ark. This is a book devoted to the interests of the "Armco" culverts, the characteristics of which are quick installation, permanence, strength, labor saving and economy. Numerous pictures show their application in highway cantonment and other drainage construction. Improved sanitation, especially where large bodies of troops are gathered, displays results from good drainage in reduced diseases and much lower death rates. It is asserted that one or two men can quickly install a great quantity of this kind of iron culvert.

All About Standardized Leather Belting.

The Graton & Knight Manufacturing Co., Worcester, Mass., has recently issued a book entitled "Standardized Leather Belting," the contents of which required practically a year to compile, so that all would be in practical shape for users of leather belting. It tells of the value of standardization of belting as well as standardization of any other machine part, and furthermore relates how belting standardization can be applied in any manufacturing plant. Another section of the book completely describes the company's standardized brands of leather belting, including recommendations for their use in all the principal industries. Still another section is devoted to mechanical rules and tables which should prove of value to any belting user in determining the horse-power of belting, the width and length needed and how belting should be ordered. This publication of 64 pages will be gladly sent by the company to anyone interested in power transmission.

OBITUARY.

Death of H. J. Kilnzing.

Howard J. Kilnzing, contracting engineer for the Pittsburgh-Des Moines Steel Co., died recently at his home, 414 Summit street, Pittsburgh, from pneumonia. He was 55 years of age.

Ira. H. Metzger.

Ira H. Metzger was killed in the big wreck on the Brooklyn Rapid Transit Railroad November 1. A thoroughly trained technical man, Mr. Metzger was also an advertising writer of unusual ability. He possessed a rare talent for combining facility of expression with technical accuracy. Although 29 years of age, he had already established his reputation as one of the ablest writers of technical advertising copy. For the past two years he had been in charge of the copy department of Rickard & Sloan, Inc., New York, and prior to that was associated with the service department of Industrial Management and the Electric Railway Journal.

PROPOSALS.

DEPARTMENT OF THE INTERIOR, General Land Office, Washington, D. C., November 1, 1918. Sealed proposals in duplicate will be received in the General Land Office until 12 o'clock noon, Monday, January 6, 1919, and then opened, for furnishing and delivering Iron Posts with Brass Caps, for public land survey corners, for use during the fiscal year 1919, in accordance with plans and specifications for manufacture and delivery, copies of which may be obtained upon application to the Chief Clerk of the General Land Office, who will also furnish blank forms of proposals. The right is reserved to reject any and all bids or to accept or reject any part thereof, in the discretion of the Commissioner of the General Land Office. Proposals should be securely enveloped, marked "Proposal for Iron Posts," and addressed to the Commissioner of the General Land Office, Washington, D. C. CLAY TALLMAN, Commissioner.

**Fidelity
and
Burglary
Insurance**



**Surety
Bonds**

Fidelity & Deposit Co. of Maryland

BALTIMORE

EDWIN WARFIELD, President

**"YORK" SAFES (all Styles)
VAULT DOORS
BANK VAULTS**

YORK SAFE & LOCK CO.

York, Pa.

1 W. Redwood St., Baltimore, Md.

**New York Chicago Philadelphia Boston New Haven
Atlanta Pittsburgh St. Paul San Francisco**

SOUTHERN CREOSOTING COMPANY, Ltd., SLIDELL, LA., U. S. A.

Twenty-eight miles from New Orleans, La., surrounded by the finest timber lands in the South. Facilities for shipping by water and rail.

Creosoted Ties, Telegraph Poles, Cross-Arms, Timber, Piles and Paving Blocks

Capacity 22,000,000 feet per annum. Cable Address, Creosote, Slidell, La.

A. B. C. Code used.

TURE

Vehicles.

"and "The
vehicles are
Section V
been issued
Co. Section
the "Chicago
accumulator"
catalogue
which are
uses of storage
se publications
cation is
pany or to

Etc.

istry in
O Charles
issued an
rating the
laboratory
copy is
and ample
s. Under
book says:
ing, we
make chem
into and
industrial
of corpora
engineering,
are included
ment. Cons
e book is

at and Road

colors on
the U. S. A's
the Dixie Co
; Jacksonville
this is a full
"Armco"
of which
ance, strength
Numerous
In highway
e construction
y where large
h, displays
n reduced
ates. It is
quickly
kind of

ther Belting
Manufacturing Co.
issued a
or Belting,"
etically a
be in practice
ing. It tells
of belting
other machines
how belting
in any
on of the
pany's
tting, including
use in all
ther section
d tables with
elting used
of belting,
d how belting
lication of
be company
transmission

ing.
cting engines
Steel Co.,
Summit street.
He was

r.
the big
insit Railroad
ined technical
e possessed
lity of exper
Although
dy established
ablest writers
For the
charge of
& Sloan,
was associated
of Industrial
Railway Jour



These Buildings all have Roofs that can be forgotten for 20 years!

THE owners of thousands of buildings scattered all over the United States (a few of which are illustrated herewith) have received from us a Surety Bond which guarantees these roofs *against leaks, wear and maintenance cost for 20 years.*

Of course, Barrett Specification Roofs do not need this guaranty to make them wear and last. The fact that most of the important buildings in the United States have the Barrett Specification type of roof proves that.

We issue this Surety Bond Guaranty merely as a means of impressing upon you our confidence in Barrett Specification Roofs. The guaranty is your assurance that you have on your building a roof that will need no attention and will give you complete, unqualified satisfaction for 20 years at least, and *probably much longer.*

All you need to do to have such a roof is to incorporate in your building specification this sentence: "The roof shall be laid according to The Barrett Specification dated May 1, 1916, and the contractors shall obtain for us the Barrett 20-year Guaranty Bond."

There is no charge for this Bond. It is obtainable on any roof of 50 squares or larger in the U. S. or Canada in towns of 25,000 or more, and in smaller places where our inspection service is available.

It will be issued to reputable roofing contractors, approved by us, who use the materials specified and who will agree to examination and approval by our inspectors.

Barrett Specification Roofs cost less per year of service than any other kind; they take the base rate of fire insurance; in fact, any way you look at it, a Barrett Specification Roof is the best roofing made for permanent buildings.

A copy of The Barrett 20-Year Specification, with roofing diagrams, sent free on request.

The **Barrett** Company



New York Chicago Philadelphia Boston St. Louis Cleveland
Cincinnati Pittsburgh Detroit New Orleans Birmingham
Kansas City Minneapolis Nashville Salt Lake City Seattle Peoria Atlanta
Duluth Milwaukee Bangor Washington Johnstown Lebanon Youngstown
Toledo Columbus Richmond Latrobe Bethlehem Elizabeth Buffalo Baltimore

THE BARRETT COMPANY, LIMITED:

Montreal Toronto Winnipeg Vancouver St. John, N.B. Halifax, N.S. Sydney, N.S.

Above: Barrett Specification Roof on Roundhouse of Baltimore & Ohio R. R. at Newark, Ohio. Roofing Contractors: Philip Krouer & Sons, Columbus, Ohio.



Above: Pierce Arrow Motor Car Co., Buffalo, N. Y. Gen. Con.: Aberthaw Construction Co., Boston Mass. Roofers: Jameson Roofing Co., Buffalo, N. Y.

At Left: Building at St. Mary's of the Woods College, Ind. Archts.: D. A. Rohlen & Son. Gen. Con'ts: The Bedford Stone & Construction Co. Roofers: Terre Haute Roofing Co., Terre Haute, Ind.

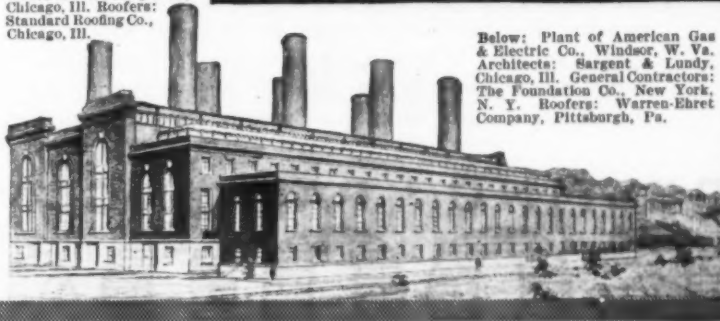


Above: Lamar Street School, San Antonio, Tex. Archts.: Adams & Adams, San Antonio, Tex. Gen. Con'ts: Wright & Sanders, San Antonio, Tex. Roofers: Turner Roofing & Supply Co., San Antonio, Tex.

At Right: Commonwealth Edison Sub-Station, Chicago, Ill. Archts.: Van Holst & Fyfe, Chicago, Ill. Gen. Con'ts: McCarty Bros., Chicago, Ill. Roofers: Standard Roofing Co., Chicago, Ill.



Below: Plant of American Gas & Electric Co., Windsor, W. Va. Architects: Sargent & Lundy, Chicago, Ill. General Contractors: The Foundation Co., New York, N. Y. Roofers: Warren-Ehret Company, Pittsburgh, Pa.

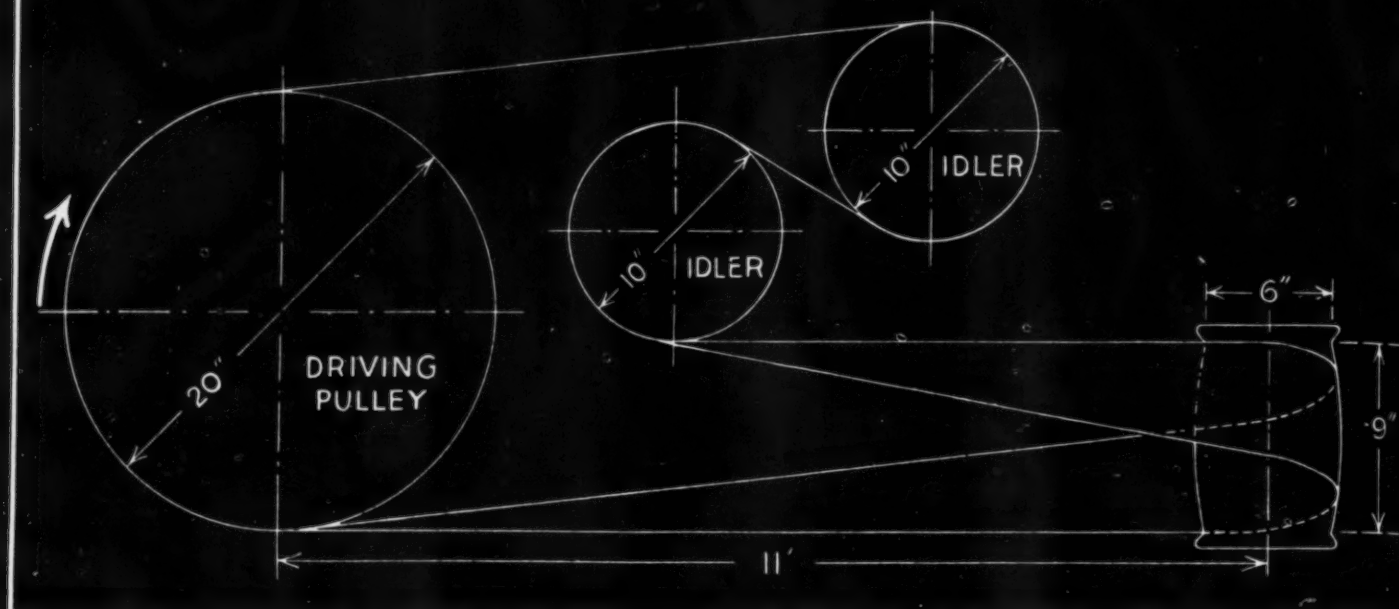


OUTLINE SIDE HEAD MATCHER DRIVE

Driving Pulley 20" dia. -- 905 R.P.M.
 Driven Pulley 6" dia. -- High Crowned & Flanged
 Horsepower -- Max. 15
 Belt Speed -- 4740 F.P.M.

Specified GLIDE Belt

5" 4 ply -- 29'



Making \$1.00—and the G.T.M.—Do the Work of \$3.10

All they were after, the Wilson Lumber Company of Bokhoma, Oklahoma, told the G.T.M.—our Mr. Heehs—was less interruption and more production from their side-head drive. Mr. Bowles, the Superintendent, asked how much his best belt cost per foot. The G.T.M.—Goodyear Technical Man—told them that he didn't know which of his belts was the best. He said that if they'd let him study the drive he'd tell them which Goodyear Belt was best *for it*—that with drives as with men, what is meat for one is poison for another.

He studied that drive and prescribed the Goodyear Belt especially constructed to serve its high-speed quarter-turn and *high-crowned, flanged driven pulley*—not the highest priced Goodyear Belt by any means, nor the one with the greatest brute strength. It was in February and the price of that Goodyear Glide Belt was fifty cents a foot, while the special double they had been using cost \$1.55.

If his price had been higher the order he finally got would have come easier. It didn't seem likely to them that a belt costing fifty cents a foot would do better than one costing \$1.55. But they decided to give it a trial—they were sick of the troubles and expense of that side-head drive—and at the price they felt that they couldn't lose much.

That Glide Belt gave six months of service, as much as what they had been getting from the \$1.55 per foot special double. On account of Glide's friction surface it delivered power better—and it required practically no attention. Six months of inferior service from the

discarded type of belting would have cost \$1.55—so that \$1.00 spent for Glide was as good as \$3.10 spent for the special double—and the better service of the Glide was thrown in for good measure.

Over thirty dollars in belt cost alone are saved every six months by that 29 feet of Glide Belt and the analysis service of the G.T.M.—\$121.80 a year. When he pointed that out, he told them of the Goodyear plan of Plant Analysis, of having a G.T.M. analyze *every* drive in the plant for the purpose of prescribing the belt best designed to meet the peculiar conditions of each. They told him to go ahead.

They order by telegram now, direct from the Goodyear Branch near them. Goodyear Belts as prescribed by the G.T.M. are releasing dollars from many other drives, reducing interruption and increasing production. If you have a belt-devouring drive that is both imprisoning and eating too many dollars, ask a G.T.M. to call. He'll do it without charge when he's in your vicinity. There are many of them—all trained in the Goodyear Technical School—all with experience in plants similar to yours—all selling belts to meet conditions and not as a hardware man sells nails. We are able to give the G.T.M.'s services free only because the savings they effect for purchasers are so considerable that a gratifying volume of business from the plants analyzed is sure to result within a year or two.

THE GOODYEAR TIRE & RUBBER COMPANY
 AKRON, OHIO

BELTING · PACKING HOSE · VALVES
GOODYEAR
 AKRON

A few of the hundreds of homes which the Youngstown Sheet and Tube Co. of Youngstown, Ohio, are erecting for employees. They are of cement construction and are coated with GF No. 101 Brick and Cement Coating to unify and improve their appearance and render them dampproof. Conzelman-Herding-Boyd, St. Louis, Architects. Unit Construction Co., Contractors.



Attractive industrial homes

DURING the war, men must go where essential work is being done. After the war, they will tend to stay with manufacturers who house them in comfortable, healthful and attractive homes.

We believe that metal lath and stucco make the most satisfactory industrial homes.

We also believe that the use of a good technical paint for the stucco, tile or other masonry surface adds the final touch to the attractiveness and permanent value of the structure.

If the house is new, such a paint will add an invitingly soft and even tint. If the house is old, the timely application of the coating will freshen and brighten the exterior.

In localities where seepage and other moisture conditions are extremely bad, a good technical paint becomes an effective waterproofing and dampproofing compound. Such a material, penetrating deeply into the wall-pores, becomes an integral part of the surface and actually repels dampness and moisture.

For any of the foregoing purposes, we recommend GF No. 101 Brick and Cement Coating or GF No. 16 Foundation Brush Coating. GF No. 101 is a dampproof paint which is applied with brush or spraying device over any kind of masonry surface. It deeply penetrates the pores, thus insures additional protection and durability to the walls. Comes in colors and in flat or gloss

finish. Cement sample block and book of complete color samples sent on request.

GF No. 16, applied over brick, tile or concrete, helps grade walls, protects basements against seepage. An economical, reliable and easily applied dampproofing which bonds tightly to the wall, but yields to expansion and contraction. Ask for samples.

The name of the GF dealer nearest you can be obtained by phoning Buyers' Aid, Inc., in cities of 70,000 or over. Ask them to send you the GF catalog, or we will send it to you direct from the factory.

The GF Waterproofing Handbook will be sent free to any interested engineer or architect on request.



THE SOUTHERN GF COMPANY

THIRD NATIONAL BANK BUILDING, ATLANTA

Metal Lath, Concrete Reinforcements, Waterproofings and Technical Paints
District Warehouses, Atlanta, New Orleans, Augusta

THE GENERAL FIREPROOFING CO., YOUNGSTOWN, OHIO, Manufacturers
Members of Associated Metal Lath Manufacturers

GF WATERPROOFINGS and Technical Paints

Classified Opportunities

MINERAL AND TIMBER LANDS WATER POWERS MISCELLANEOUS PROPERTIES

FOR GOOD VALUES in Virginia blue grass or general purpose farms, coal and timber lands, and Roanoke City and suburban property, factory sites particularly, address Ellis L. Wright, 313 South Jefferson Street, Roanoke, Va.

2600 ACRES, one mile from Dillwyn, Va., valuable deposits of pyrites, copper and gold land; also farm and timber lands of every description. Write for catalogue. Emmet D. Gregory, Dillwyn, Va.

MANGANESE ORE LAND MANGANESE MINE.

I have for sale the whole or a portion of a manganese property; very rich ore; partially developed; engineer's report; can be made a big payer. Would either sell outright or retain an interest and furnish a portion of the capital for development. Do not reply unless you mean business. Address No. 5194, care Manufacturers Record, Balto., Md.

100 ACRES MANGANESE ORE LANDS for sale; engineer's estimate, 800,000 tons; railroad one mile; now mining with pick and shovel; analysis and records available. Address Donk Aydelott, Tullahoma, Tenn.

COAL LAND AND MINES

KENTUCKY GAS & BY-PRODUCT COAL.

Opening mines, Harlan & Hazard Fields, sold to consumers of Central West. Low sulphur and ash, especially suited for malleable-iron producers. Consumers can assure themselves of uniform quality and desired quantity. Agent also for virgin coal lands. Reference—any Louisville bank. Upon request will be pleased to refer to large consumers whom I have located in this territory.

J. STODDARD JOHNSTON,

PAUL JONES BUILDING,
LOUISVILLE, KY.

COAL AND TIMBER LAND

FOR SALE—Bargain: 50,000 acres Tennessee coal and timber land in parcels of 5000 to 10,000 acres, or together, \$2.50 to \$10.00 per acre; part on railroad, part fine virgin timber; good titles; exposures of highest grade coaling coal. Owned by estates. E. H. Benedict, 1921 Boatmen's Bank, St. Louis, Mo.

FOR SALE—10,000 acres coal land, Rhea County, Tennessee, near C. N. O. & T. P. R. R., 32 miles north of Chattanooga; 3 workable veins, drift mining; part or entire acreage will be sold. Estate must be closed. P. D. Reece, 310 Huntington Bank Bldg., Columbus, Ohio.

50,000 ACRES Tennessee coal and timber lands, located in Lincoln, Franklin and Coffee counties; must sell to settle partnership. Price \$2.50 per acre; \$15,000 cash, balance on ten equal annual payments. Would accept exchange property to the amount of one-half. T. N. Fingers, Jr., Columbia, Tenn.

COAL MINES, COAL AND TIMBERED LANDS for sale. Write me. I can get you what you want. H. C. Van Aken, 309 Post Building, Battle Creek, Mich.

LOANS ON TIMBER LAND

SALES NEGOTIATED
Check Estimates for Loans on Timber Lands. Consulting Forester and Timber Land Factor. 25 Years' Experience All Parts of Country. F. H. MEIER,
165 Broadway, New York, N. Y.

TIMBER

300,000,000 FEET VIRGIN PINE.
We own and can offer for sale three hundred million feet of virgin pine timber in Palm Beach County, Florida, in a solid body, at \$2.50 per M. Will divide tract. Reasonable terms.
For full particulars address owners.
SOUTHERN STATES LAND & TIMBER COMPANY,
West Palm Beach, Florida.

FOR SALE—About 70,000,000 feet of fine North Carolina timber, chestnut, hemlock, oak, white pine and poplar; very fine body of timber; accessible to railroad; will bear investigation. A. C. Springs, Charlotte, N. C.

FOR SALE—All the pine, cypress, oak and gum timber on 6000 acres of land in Halifax, Martin and Edgecombe counties; the Norfolk & Carolina Railroad runs through upper end, 50 miles from Norfolk, Va. R. H. Gatlin, Tarboro, N. C.

FOR SALE—Rosemary and short-leaf pine timber sawed to specifications up to 40 ft.; also hickory, gum and oak to dimensions as required. W. L. Coston, Bessemer, Ala.

FOR SALE—Fifty million feet of fine South Carolina timber, consisting of thirty-nine million feet red gum, five million oak, three million cypress, three million short-leaf pine. This timber is very large and of fine quality; easily logged at any time of the year. Price reasonable. Accessible to railroads. Will bear close investigation. Address No. 5083, care Manufacturers Record.

RATES AND CONDITIONS

Rate 25 cents per line per insertion. Minimum space accepted, four lines. In estimating the cost, allow seven words of ordinary length to a line. When the advertisement contains a number of long words, proper allowance should be made. Terms: Invariably cash with order; check, postoffice or express order or stamps accepted. No display type used. Questionable or undesirable advertisements will not be accepted. The assistance of our readers in excluding undesirable advertisements is requested. We reserve the right to refuse any advertisement. No patent medicine, whiskey or mining stock advertisements accepted. Rate for special contracts covering space used as desired within one year as follows: 100 lines, 25c. per line; 300 lines, 21c. per line; 500 lines or more, 20c. per line.

TIMBER

FOR SALE—Sixty million feet spruce and forty-one million feet oak, poplar, chestnut, etc., in North Carolina. Price, \$200,000. P. O. Box 8 Erie, Pa.

22,000 ACRES Polk Co., Fla.; will cut 50 million ft. pine and 17 million ft. cypress; also 60 boxes turpentine, 10-year lease; close to railway. Price \$150,000. Jno. A. Martin, Aberdeen, So. Dak.

TIMBER LAND

FOR SALE—Fine tract timber, mostly original growth, containing about 400 acres, estimated to cut 3,500,000 feet good timber, by good cruiser, and about 800,000 R. R. ties, located 8 miles from N. & W. Ry. and 12 miles from B. & O. Ry.; very good road to both places; easy haul; land lays gently rolling; easy logging. This is fine land, easily cleared after timber is removed; located on good river; fine fishing and hunting; all kinds of game. We have a special price on this for a few days. Price, \$30,000; terms if wanted. See this at once if you want a bargain. If you are not interested in timber and want a real cheap farm, write for our catalogue. We have some real bargains.
THE REALTY COMPANY OF VIRGINIA, INC., BLACKSTONE, VIRGINIA.

INVEST IN HARDWOOD.

Big, legitimate and permanent profits. The one natural resource rapidly going out of existence. 100,000 acres virgin hardwood timber lands in Arkansas, Louisiana and Mississippi guaranteed estimate by foresters. Write Owners—Arkansas Timber Land Company, Incorporated, 401-403 Southern Trust Bldg., Little Rock, Ark.

TIMBER TRACT OF 1000 ACRES, fee-simple, Eastern Carolina, close to railroad facilities; estimated 15,000,000 feet of pine, juniper, cypress, poplar and gum. Raleigh Real Estate & Trust Co., Raleigh, N. C.

4500 ACRES VIRGIN TIMBER, oak (white and red), hickory, gum, pine and yellow poplar. R. R. through it few miles. Excellent proposition. Write C. C. Clay Alfalfa Land Co., Demopolis, Ala.

FARM AND TIMBER LAND

FOR SALE—2,000,000 standing trees; choice variety hardwood, large and tall, mostly walnut, cedar, oak and iron wood, including 120,000 acres, in fee-simple, finest grazing and sugar-cane land, located in best province of Argentine Republic. Transportation: Rail and water accessible. Would pay a profit, if developed, over \$10,000,000 above our price for the property. Address Tyson Realty Co., Raleigh, N. C.

WE OWN LARGE TRACTS OF TIMBER LANDS, cut-over lands and colonizing lands. If interested, address H. H. Wefel, Jr., & Co., Mobile, Alabama.

FRUIT, FARM AND TRUCK LANDS

FLORIDA

A BEAUTIFUL WINTER HOME, a profitable orange and grapefruit grove, a general farm, cattle, hog or poultry ranch in the famous Indian River section, Vero, Florida. The wonderful climate permits not only agricultural operations all the year, but all enjoyable, life-prolonging outdoor sports. Investigate now this wonderfully charming section. Indian River Farms Company, First National Bank Building, Vero, Florida.

FOR SALE—FLORIDA—One-quarter section well-drained black muck land in Palm Beach County, adaptable to sugar cane, general farming and stock raising. Green pasture every month of the year. This place is located in the most progressive county in Florida, within easy reach of Palm Beach and the East Coast resorts, and will make a fine, profitable farm for either business man or farmer. Price \$35 per acre. For details write J. A. Rostan, Lake Worth, Florida.

FOR SALE—Improved 31-acre farm with orange grove. Price reasonable. I. Mizelle, Orange Lake, Fla.

THE LAND OF SUNSHINE.

Get away from buying cold, Northern blizzards and worries of war. It's as cheap to live at Hotel Palms, West Palm Beach, Florida, as at home. Write manager for instructive booklets and rates.

FLORIDA

6500 ACRES IN FLORIDA.—Wholesale price; will not retail. Located on the East Coast, in Volusia County. Price \$5 per acre. 8 miles west of New Smyrna, Fla., on the Orange City branch of the Florida East Coast R. R. 2250 acres are "prairie land." Has an elevation of 22½ to 41 feet above tidewater; top soil is a black sandy loam, underlaid with clay. Would make an ideal stock range. Title good. Owned in fee-simple, without incumbrance. Other information will be furnished upon request by E. C. Howe, 749 Hartford Bldg., Chicago, Ill.

GEORGIA

1400 ACRES good farm land, 45 miles of Atlanta, 2½ miles of good town, on splendid highway. 1000 acres in cultivation; well improved ten-room and six-room residences and 18 good tenant-houses; plenty barns, wagon sheds, cribs, etc. Timber sufficient to keep up all buildings. Good pastures, watered by creek and numerous branches. Land lies well; can be handled with tractor. \$40 an acre ¼ cash, reasonable terms on balance. McLendon Bros., Atlanta, Ga.

MARYLAND

112 ACRES—1 mile from Belair road, near Baltimore; 72 acres clear, in high state of cultivation, balance woodland; 6-room stone dwelling, hot and cold water; barn and harrack; orchard. Milton Tolle, 216 St. Paul St., Baltimore, Md.

NEW MEXICO

LAND SCRIP

Good to locate surveyed or unsurveyed land. Hugo Seaberg, Raton, New Mex.

SOUTH CAROLINA

FOR RENT OR SALE—One of the finest tobacco and cotton farms in South Carolina. Parties in neighborhood making as much as \$800 worth tobacco per acre. Lot of cypress and green timber, also lot pine timber on place. Right at railroad station. Fine opportunity to rent or buy. Address M. K. Lee, Monroe, N. C.

TENNESSEE

FOR SALE—A fine tract of land of 584 acres, in Hardin County, Tennessee, three and one-half miles of Coffee Landing, on Tennessee River; 350 acres in Mud Creek Drainage District, said district formed 1914, and canal cut; 234 acres of hill land, 2 farmhouses, 1 cabin, 1 set of barns; land suitable for cotton, corn, wheat, hay and livestock. Will sell for cash, exchange for Liberty Bonds or 25 per cent. cash; remainder, 3 to 10 years, to suit purchaser, with 6 per cent. interest. Price upon application. J. F. O'Neal, Henderson, Tenn.

FOR SALE—95-acre farm near Morristown, Tenn. I have two farms, and will sell my 95-acre farm and crop for \$8500. This is grass, corn and wheat land, and is worth \$120 per acre. A new 6-room bungalow, barn, a store building, and a good location for a country store, on a good pike, within mile of good school. Place is watered by creek, well and spring. Fourteen acres oak, hickory timber; good orchard; a fine home. Address D. C. Brown, Route 7, Morristown, Tenn.

TEXAS

240 ACRES WELL IMPROVED FARM, ¼ mile good school and church; 370 acres modern improvements. Other smaller farms at reasonable prices. Good water and no crop failures, delightful climate. Correspondence solicited. T. E. Campbell, Canton, Tex.

VIRGINIA

VIRGINIA FARM FOR SALE.
513-acre farm, between Newport News and Yorktown, Va., two miles from C. & O. Station, fronting one mile on good road, half cleared and balance in young timber, well fenced with woven wire and cedar posts, naturally drained large fertile fields; ideal for stock or truck farm, and lies well for subdividing.
Price, including horses, mules, cows, hogs, sheep machinery, tools, etc., LESS THAN \$50 PER ACRE. HUNDLEY & APPLE-WHITE, INC., NEWPORT NEWS, VA.

BUSINESS OPPORTUNITIES

FARMING OPPORTUNITIES AND INDUSTRIAL SITES along the Winston-Salem and Southbound Rwy. Co. Here climate, transportation, good roads, fine schools, excellent markets contribute to the success of farming, and the large and prosperous industrial centers along our lines offer locations for industries of various kinds. Address S. P. Collier, Jr., Winston-Salem, N. C.

GET IN BUSINESS FOR YOURSELF.
Reliable broker has several established businesses in various locations and requires experience; for sale cheap, or will transfer real estate. Little capital required. Opportunities. Manager, 906 Webster St., Chicago, Ill.

PARTNER WANTED to take half in ice power and water plant in Maryland. Additional capital needed in order to extend. Located in railroad center surrounded by rich agricultural and manufacturing territory. Address No. 5194, Manufacturers Record, Balto., Md.

FOR SALE—Forty thousand feet post oak, white oak, red gum, poplar, oak, tupelo gum and pine; three-fourths press, red gum, post and white oak, single-cut 40,000-capacity Clark band saw with ramps and well-equipped yarding machine, drydock and planing mill; one Baldwin locomotive; 12 miles logging and dog-gauge railroad; employees' cottages. Mill now in actual operation, located in nice town, with good labor supply. This is an excellent opportunity for a wood and cypress operator. Present owners are without experience in hardwood and press is reason for making sale. Will sell with principals only. Address No. 5194, Manufacturers Record, Balto., Md.

FLORIDA—Sample copies Tropic magazine (illustrated) and year's subscription Florida Poultry and Stockman (monthly) 50 cents postpaid. Address Tropic Advertising Service, Miami, Fla.

FOR SALE—Ossage Orange Wood, lots, slabs and small pieces for carpenter's use. This wood gives extracts most cost rose wood. Address No. 5194, Manufacturers Record, Baltimore, Md.

HIGH-CLASS MANUFACTURING of wholesale lumber company, holding location and opportunity, desires to increase capital from \$50,000 to \$100,000. Have position for experienced hardwood operator also manager of entire hardwood operation. Don't apply unless you have both capital and ability. Or we offer an absolutely 10 per cent. investment for money well service. Good investment for retired merchant; the funds of an estate; or use a young man with capital and managerial ability who desires to learn the lumber business. Address No. 5194, Manufacturers Record, Baltimore, Md.

BIG SUGAR proposition. 80,000 acres cane or sugar beet land. Can sell stock to Florida people. \$7.50 per acre never freezes. No trade. Sadler, Fort Myers, Fla.

HOTEL—Great opportunity in New York. I am drafted and I have to get out, so I will sell my fortune at cost for quick deal. Hotel, five stories, brick building, 60 excellent rooms with all conveniences, large dining-room, poolroom, large ballroom, steam heat, etc. \$16,000 required in advance. If you mean business, write me. Address N. P., Postoffice Box 618, New York, N. Y.

SALESMEN VISITING the larger industrial plants and public institutions of beaten trail can materially increase income by representing manufacturer of essential specialty on commission. Unit about \$75—commission 20%; no expenses and very little time necessary. Klinge Bros., Inc., 1755 Berteau Ave., Chicago, Ill.

HOTEL FOR SALE

FOR SALE—25-ROOM TOURIST HOTEL on St. Lucie River, at Palm City, Fla., on Dixie Highway. Splendid fishing, fresh and salt water; best hunting preserve in the State. Hotel completely furnished with modern conveniences, beautifully landscaped. Price and terms very reasonable. Address Palm Beach Improvement Co., Drawer 1, West Palm Beach, Fla.

GOVERNMENT CONTRACTS

REPRESENTATION before Congress, Courts, Government Boards and Departments. We specialize in daily representation to Government bidders and contractors. U. S. Legal Corporation, Washington, D. C.

WILLIAM J. DOW announces that he is now located at 201-227 Colorado Building, Washington, D. C., where he will give attention to matters relating to Government contracts, licenses, income and war contracts, war boards, admiralty and Court of Claims.

Classified Opportunities

INCORPORATING COMPANIES

DELAWARE CHARTERS.
Stock Without Par Value.
Directors Need Not Be Stockholders.
Write for new DIGEST (4th ed.)
CORPORATION COMPANY OF DELAWARE
Equitable Building, Wilmington, Delaware.

TRADE ACCEPTANCES

"Trade Acceptance" forms supplied. Request sample. Commercial Form Co., Paterson, N. J.

PATENT ATTORNEYS

PATENT YOUR IDEAS.—\$3000 offered for certain inventions; book, "How to Obtain a Patent," and "What to Invent," sent free upon request; send rough sketch for free report as to patentability. We advertise your patent for sale at our expense. Chandler & Chandler, Patent Attorneys, 978 F St., Washington, D. C.

PATENTS, TRADE-MARKS AND COPYRIGHTS.—Write for list of patent buyers and inventions wanted. \$1,000,000 in prizes offered for inventions. Send sketch for free opinion as to patentability. Our four books sent free. We assist inventors to sell their inventions. Victor J. Evans Co., Patent Attorneys, 712 Ninth St., Washington, D. C.

PATENTS AND TRADEMARKS
Preserved by a former Examining Official of the U. S. Patent Office.
NORMAN T. WHITAKER
Attorney-at-Law, Mechanical Engineer,
Whitaker Bldg., Washington, D. C.
Inquiries Invited

PATENT YOUR IDEAS.—\$3000 offered for certain inventions; book, "How to Obtain a Patent," and "What to Invent," sent free upon request; send rough sketch for free report as to patentability. We advertise your patent for sale at our expense. Chandler & Chandler, Patent Attorneys, 978 F St., Washington, D. C.

SHIPYARD SITE

SHIPYARD SITES.—10 to 50 acres with water front. If interested you are invited to inspect this property. Jos. A. Wallace, 21 Birkley Ave., Norfolk, Va.

FACTORY SITES

BALTIMORE FACTORY AND TERMINAL SITES.—Statement of Asa G. Candler, President The Coca-Cola Co.: "Investigation conducted as that Baltimore is not only the commercial metropolis for Southern trade, but that it affords shipping opportunities both by water and rail for domestic and foreign traffic superior to any of the great cities in any section of the United States." Leads in Baltimore and derive these advantages. We can provide accommodations to meet your requirements.

"OUR MOTTO":
FACTORY AND TERMINAL SITES
IN BALTIMORE.
Wm. B. Martien & Co.,
North Floor, Lexington St. Bldg., Balto., Md.

COMMERCIAL MANUFACTURING PROPERTY.

TIDEWATER AND RAIL LOCATION.
NEW YORK CITY AND HARBOR.
One of the best sites on the whole Atlantic seaboard; 2300 ft. pier line; 87 acres upland; 19 acres riparian rights; 21 ft. water low tide on U. S. Gov. channel; B. & O. R. R. line forms one boundary. Will sell as a whole or in part. Send for details. No. 5544.
J. Sterling Drake,
29 Broadway, New York City.

MOTOR TRUCK FACTORY.

Ideal location for motor truck or automobile factory or assembling plant, near tide-water, surrounded by abundance of raw materials. Would take interest ourselves and also to correspond with manufacturers seeking location or with man of experience, ability and means who would organize and manage a company. Talltimber Lumber Company, Talltimber, Sabine County, Texas.

INDUSTRIAL PLANTS FOR SALE

FOUNDRY, MACHINE SHOP AND WOODWORKING PLANT
Equipped Foundry and Machine Shop, Central Location, Abundant Help, Penna. Buildings, Steel Frame Buildings, Large Reservoir, Early Possession. Level Ground Suitable for Growing Concern.
ALSO
Large Fully Equipped Woodworking Plant, Modern Machinery, Dry Kilns, Railroad Siding, etc. CROSS & BROWN COMPANY, 18 E. 41st Street, New York City.

INDUSTRIAL PLANTS FOR SALE

WOODWORKING PLANTS

LARGE WOODWORKING FACTORY. 3-story brick building, equipped with American machines throughout, all new; dry-kilns, fine power plant, large storage yard, good sidings, connects four railroads; plenty empty cars, located on river, and can ship any point on Ohio or Mississippi Rivers; rich timber area to supply plant for century to come; largest axe plant, glass plants, armor plant, powder plant in world surrounds this property; also steel and chemicals plants. Wonderful opportunity for right party. Will sell on easy terms. Owner now in Government service. Wire or write P. P. Breece, Box 344, Charleston, W. Va.

BLAST FURNACE

FOR SALE OR LEASE.—Small charcoal blast furnace. Unlimited quantity of low-phosphorus brown ore on the property. Plenty of good wood that can be had at reasonable prices. Furnace can be started in 30 days. Address J. G. Thomson, 140 Coffee St., Talladega, Ala.

BAND MILL

FOR SALE.—Stearns 8-ft. band mill, with power plant, filing-room machinery and full equipment. Immediate possession. Full description on request. Clear Fork Lumber Co., Unicoi, Tennessee.

STONE-CUSHING PLANT

FOR SALE.—Crushing plant in operation, located on main line railroad, close to large market. Exceptional opportunity. Address No. 5189, care Manufacturers Record.

SITUATIONS WANTED

OFFICE MANAGER with executive training, familiar with cost and financial accounting, purchasing and credits; now in eleventh year secretary-treasurer of machinery manufacturing corporation in the South; no room for further promotion in present corporation, so desires connection with office end of manufacturing concern; college education; age 41; good health; married. Salary, \$3000 minimum. Confidential. Address No. 5170, care Manufacturers Record, Balto., Md.

AMERICAN, now holding executive position, with thorough practical knowledge of Latin America and European markets, knowing by long commercial trips those countries, and Spanish, French and Italian languages, wishes responsible position with concern desiring the services of an expert exporter. Address No. 5189, care of Manufacturers Record, Baltimore, Md.

GRADUATE CHEMIST, married; experience; feeds, foods, oils, cement, etc. Some organic experience. Desires immediate change. Address No. 5191, care Manufacturers Record.

MEN WANTED

IF ACTUALLY QUALIFIED for salary between \$2500 and \$25,000, communicate with undersigned, who will negotiate strictly confidential preliminaries for such positions: executive, administrative, technical, professional; all lines. Not an employment agency. Undersigned acts in direct confidential capacity, not jeopardizing present connections. Established 1910. Send name and address only for explanatory details. R. W. Bixby, E64-66 Niagara Street, Buffalo, New York.

WANTED.—Master Mechanic for sugar refinery, not subject to draft; must have first-class reference, otherwise not considered; must be experienced in handling pumps, engines, dynamos, motors, boilers, and thoroughly acquainted with machine-shop practice. A man that has had sugar-house experience is more desirable than one that has not. Salary \$250 per month; steady employment to right party. For particulars address General Superintendent, P. O. Box 1579, Savannah, Ga.

WANTED AT ONCE
SUPERINTENDENTS, FOREMEN AND EXPERIENCED MEN
for street paving, roads, water-works and other construction. State what branch more familiar with.
ROBERT G. LASSITER & CO.,
Citizens' Bank Bldg.,
Norfolk, Va. Raleigh, N. C.
Home Office: Oxford, N. C.

CHECKERS AND DRAFTSMEN.—Tennessee Coal, Iron & Railroad Company requires men experienced in steel plant work. Apply, giving education, experience, salary and reference, to R. E. Brakeman, Chief Engineer, Fairfield Works, Birmingham, Alabama.

WANTED.—An experienced man to take charge of our humidity-regulated dry kilns and lumber yard. None but high-class experienced man need apply. Continental Car Company of America, Louisville, Ky.

LIVE MEN wanted to handle side line in connection with boiler-room specialties. Good commissions, exclusive territory, liberal contract. If you are a hustler and a stickler, write us. The Boiler-Kote Company, 343 S. Dearborn Street, Chicago, Illinois.

MEN WANTED

WANTED.—A thoroughly competent, practical superintendent and estimator, to take charge of a marble finishing plant. Climatic conditions unexcelled; location in one of the middle States. Salary satisfactory to right party. Give references, experience, married or single. Address, No. 5187, care Manufacturers Record, Baltimore, Md.

MACHINERY AND SUPPLIES

RELAYING RAILS.

Unusual opportunity for coal mines and lumber people to obtain quickly good relayers that will enable them to increase their output and meet urgent Government requirements for coal and lumber. We desire to clean the entire lot up in ten days, and will quote prices that will be a saving to those in need of rails:
12 miles 40-pound relayers.
4 miles 45-pound relayers.
1 mile 50-pound relayers.
2 miles 35-pound relayers.
10 miles 25-pound relayers.
Angle bars weighed; 6 complete frogs and switches; R. R. spikes. Wire or write to G. S. Patton Lumber Co., Savannah, Ga.

FIFTY PFAUDLER ENAMEL TANKS.
capacity 1860 gallons to 18,000 gallons. Also wooden vats, beer filters, copper kettles, beer coolers and refrigerating machinery.

CHAS. S. JACOBOWITZ,
Brewery Diamondtler,
Buffalo, N. Y.

FOR SALE.—A quantity of heavy cold-rolled steel shafting, pillow blocks, roller-bearing hangers, wood pulleys, rope drive, etc.; also one 15-in. matcher, one Mitte & Merrill 3-M Hog, Fans, etc. List on application. Graves, Manbert, George & Co., Buffalo, N. Y.

FOR SALE.—Power plants and miscellaneous electrical equipment. St. Cloud Public Service Co., St. Cloud, Minn.

FOR SALE.—The wonderful "K" man stump puller, complete with all cables; used slightly. Price \$175. Address Lock & White, Coden, Ala.

FOR SALE.—One 8 H. P. Titan Oil Engine in first-class condition. Used only two seasons. Price very reasonable. John R. Kegley, Wytheville, Va.

MACHINERY AND SUPPLIES

FOR SALE.—CIRCULAR SAW MILL. Complete with steam feed, edger, trimmer, cut-off saw, live rolls, sawdust and wood conveyors, live sorting table, roll-off wagon, Berlin A-1 planer, 1 80 H. P. boiler, 1 100 H. P. boiler, 2 engines. Mill is a complete unit, now sawing 20 M ft. small logs daily. Will be cut out within a month. The Fox Park Timber Co., Laramie, Wyo.

FOR SALE.—Horizontal storage tanks, capacities 9000 to 21,000 gallons, our specialty. Prompt shipment; in some cases, immediate. Sharpville Boiler Works Co., Sharpville, Pa.

FOR SALE.—Seven 100 H. P. and one 150 H. P. horizontal tubular boilers. Two Worthington compound steam pumps, 14x20x12x15. Two Cameron steam pumps, 12x22x10x20. Several boiler feed pumps. New and second-hand 8 and 10-inch centrifugal pumps, for sand or water. One Rand Imperial type No. 10 air compressor, duplex steam end and compound air end. M. A. Waldo, Receiver, Bartow, Fla.

FOR SALE.—Four-ton ice-making machinery. "York" compressor, coils, tank, cans and 25 H. P. De La Vergne oil engine. Write Apalachicola Packing Co., Apalachicola, Fla.

FOR SALE.—Triumph ice tank, containing 380 cans, 20 wide and 19 long. Equipped with shell type brine cooler 33" diameter and 14' long. Tank, cooler, top, cans are all in first-class condition, having been used only five years. Produced average 27.5 tons ice per day during July and August. Can be loaded on 30 days' notice. Write Siloam Springs Ice Co., Siloam Springs, Ark.

ENGINE, BOILER FOR SALE.—One 25 H. P. engine and 30 H. P. boiler; pulleys and shafting in good repair. S. F. Woodall, Woodland, Ga.

MACHINERY and SUPPLIES WANTED

WANTED.—Mills, plants, electric machinery, drykilns. We buy for cash f. o. b. shipping points. Our prices for old mills are the highest. Let us prove it. Melreger Company, 1405 So. Blue Island Ave., Chicago, Ill.

To Our Advertisers

We Ask Your Co-operation

Owing to the labor shortage and the uncertainty of the mails at this time, we ask your co-operation in sending in advertising copy and cuts. It is our aim to give you the best service possible—submitting proofs and making changes whenever requested—but due to the unusual conditions to-day, it is necessary for us to strictly observe the following "Closing-down Dates."

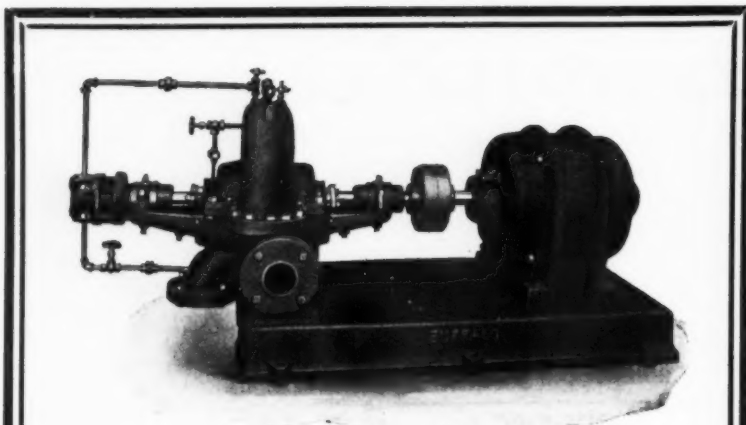
When proofs of advertisements are required, copy and cuts must be in our hands two weeks in advance of date of publication and approved proof back one week in advance at the latest.

When proofs of advertisements are not required, copy and cuts must be in our hands one week in advance of date of publication.

Advertisers are requested to observe the necessity of having copy in our hands in ample time as stated above, to the end that advertisements may always receive proper classifications and be inserted in the issue for which they are intended.

MANUFACTURERS RECORD,
BALTIMORE, MD.

Published Every Thursday



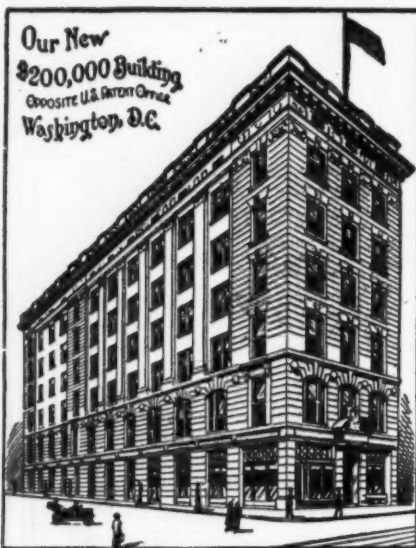
"Buffalo"

Horizontal Divided Shell Centrifugal Pumps

are giving satisfaction wherever used because they are designed right and built right. You can always be sure of capacity and pressure you specify when you order a "BUFFALO."

Write for Bulletin 270

Buffalo Steam Pump Co., Buffalo, N. Y.
Manufacturers of All Types of Pumping Machinery
Canadian Blower and Forge Company, Limited, Kitchener, Ontario



Our New
\$200,000 Building
Opposite U.S. Patent Office
Washington, D.C.

PATENTS That Protect and Pay

Send model or sketch for free opinion as to patentability. Our four books sent free to any address:

How To Obtain Patent, with one hundred mechanical movements. **What To Invent**, with valuable **List of Inventions Wanted**. **One Million Dollars Offered for Inventions**. **List of Patent Buyers and Millions in Trade-Marks**. Patents secured by us **advertised**.

WANTED NEW IDEAS

Send for **LIST OF PATENT BUYERS** who consult us when purchasing patents. Contains requests for **MANUFACTURERS, MAIL-ORDER HOUSES and PROMOTERS** for patents secured by us, and suggestions to New Ideas they wish to purchase. We invite manufacturers and promoters to address our Sales Department regarding the purchase or leasing of a number of meritorious patents secured by us.

VICTOR J. EVANS & CO.

749 Ninth Street, WASHINGTON, D. C.

We have recently secured the following patents. A copy of any of these patents will be forwarded upon receipt of ten cents. Address all communications to Sales Dept., Victor J. Evans & Co., Washington, D. C.

W. W. Milam, feeder attachment.
F. B. Givins et al., fly catcher.
Alfred Gibson, window cleaner.
F. Allen, square-hole bit.
J. L. Allen, farm tractor.
Mrs. Helena A. Kean, convertible bed.
Chester A. Gordon, railroad crossing.
A. W. Tuttle, stamp-canceling machine.
E. G. Rautzenberg, soap holder and support.
Mrs. Flora C. Pullman, flower holder.
L. C. Laurent, automobile license.
A. E. Moll, road drag.
Chas. J. Hellings, insulator.
V. Di Mario, advertising device.
Frank W. Kline, salt and pepper shaker.
B. B. Stubblefield, engine primer.
Geo. A. Smith, clothes hanger.
John W. Singer, cylinder grinder.
Geo. J. Hall, door stop.
Wm. E. Griffin, nut lock.
Carl A. Carlson, spring stiffener.
J. M. Sanders, auger bit.
R. E. Riecke, beet-loading machine.
E. T. Schmucker, storage-battery jar.
W. G. Engle, garment support.
Geo. L. Brown, improved tooth brush.
L. E. Carter, blue-leak inverter.
Casper A. Becker, string-bean slicer.
Robt. J. Millon, safety tractor hitch.
C. H. Lindenberg, theater-seat construction.
John Lassell, suction power for ships.
James M. Keltbley, water-operated motor.
L. C. Barker, gradometer.

Frank E. Aurand, commutator slotting device.
W. H. Finney, tip holder.
A. Wickersham, cuspidor lifter.
A. N. Weidenbach, egg-case machine.
P. E. Williams, can opener.
T. M. Howell, shoe-cleaning device.
F. W. Westbrook, smoke injector.
M. K. Perpick, barber-chair attachment.
C. B. Stockstill, railway-crossing gate.
W. Maple, grain separator.
John Garner, steamer table.
Wm. McCormick, ash sifter.
C. A. Long, fertilizer spreader.
Mrs. Sally M. Spencer, nose bag.
H. T. Coddin, rail joint.
John Frew et al., coal separator.
T. J. Cagle, collapsible poultry coop.
A. E. Powell, fuel intake heater.
L. F. Welsandt, timber bolster.
R. W. Young, lubricator.
H. B. Worley, kafir corn header.
F. W. Shirley et al., wire rope socket.
O. J. Vickers, air-hose coupler.
Jos. W. Sireley, cultivator.
Louis Weigel, necktie.
R. A. Peacock, parlor golf game.
Louis P. Fry, sled standard.
J. G. Buchanan, threshing-machine attachment.
W. J. Benson, carburetors.
Geo. W. Deatrich, tires.
W. L. Davis, spring wheel.
J. M. Flottman, envelope seal.

S. Elmeri, bath-brush attachment.
James F. Boose, cultivator.
M. P. Marong, license box.
N. A. Weare, mirror adjuster.
Louis Bagl, automobile puller.
H. H. Baker, pipe holder.
G. Baily, thimble.
V. Boscavilla, submersible apparatus.
E. Caravia, arch support.
F. H. Casey, inkstand.
Wm. A. Vinson et al., signal device.
Geo. D. Bender, submarine lifeboat.
G. Windle, clothes hook.
Arthur Robinson, metallic tie.
J. C. Peters, radiator heating apparatus.
H. Ohashi, non-skid tire.
Robt. L. Moore, combined letter sheet.
C. S. Henslee, device for closing openings in the hulls of vessels.
M. E. Cramer, clothespin.
G. P. Buchanan, bulb remover.
A. Faiella, combination chair.
Walter A. Burnham, money chart.
Geo. D. Bulmer, foldable swing.
C. G. Bauer, machine.
Frank Fulton, screen attachment.
L. S. Connor, cultivator.
M. L. Kinnison, casket.
M. E. Cuddy, fire extinguisher.
P. Richard, tire.
G. C. Jackman, vehicle.
A. E. Kingsbery, auto fender.
T. C. Lackland, filter.
Otto Racine, quilting frame.

George W. Denson, cultivator.
Albert H. Lage, folding bracket.
H. J. Hickey, internal-combustion engine.
Peter D. Hoo, wheelbarrow.
R. J. Hanni, luggage carrier for automobile.
Wm. V. Taber, nut lock.
R. Smith, fuse.
Wm. G. Winter, phonograph light.
John O. Root, garden tool.
Earl R. Gribben, till.
J. A. Kimball, engine stand.
W. W. Treese, showcase.
Ross O. Pierce, nut lock.
J. R. Pratt, arc-lamp attachment.
John R. Palmer, watch easel.
H. E. Coons, cutting apparatus.
C. C. Cook, casket.
Geo. J. Chantling, farm tractor.
Anthony Fusco, cuff link.
J. G. Ford, cottonseed delinter.
Frank M. Thomas, hose-coupling device.
Mrs. Nora Rettig, fly-paper holder.
H. Hensick, light reflector.
Herbert Barnett, automobile switch.
Frank.
F. E. Dixon, folding umbrella.
Richard M. Davis, automatic carriage typewriter.
E. G. Liddy, sled attachment.
B. Kent, grain shocker.
J. B. Condie et al., finger attachment.
W. R. Hadcock, transfer sheet.
John Howard, tobacco cutter.

PROPOSALS

Bids close November 21, 1918.

PROPOSALS FOR MACHINE-SHOP
Equipment, Bolts, Nuts, Rivets, Washers, Nails, Brass, Bronze, Copper, Yellow Metal, Lead, Bell Metal, Solder, Tin, Wrenches, Safes, Poultry Netting, Electrical Supplies and Fixtures, Automobile Tires and Tubes, Marine Clocks, Leather, Brooms, Oakum, Rope, Burlap, Saddle Pads, Thread, Asphalt and Asbestos Shingles, Roofing Felt, Bituminous Enamel and Solution, Millwork, Switch Ties and Lumber. Sealed proposals will be received at the office of the General Purchasing Officer, The Panama Canal, Washington, D. C., until 10:30 o'clock A. M. November 21, 1918, at which time they will be opened in public, for furnishing the above-mentioned articles. Blanks and information relating to this circular (1238) may be obtained from this office or the offices of the assistant purchasing agents, 24 State Street, New York City; 606 Common Street, New Orleans, La., and Ft. Mason, San Francisco, Cal.; also from the United States Engineer offices in the principal cities throughout the United States. A. L. FLINT, General Purchasing Officer.

Bids close November 15, 1918.

\$25,000 6% Bonds

Fremont, N. C.

Sealed proposals will be received by the Board of Aldermen of the Town of Fremont, North Carolina, at the Clerk's office in said town, until the 15th day of November, 1918, at 3 o'clock P. M., when they will be publicly opened, for the purchase of \$25,000 Public Improvement Bonds of said town. The bonds will be coupon bonds, registerable as to principal and interest, of the denomination of \$1000 each, dated September 15, 1918, and payable as follows: Two bonds on September 15 in each of the years 1919 to 1928, inclusive, and one bond on September 15 in each of the years 1929 to 1933, inclusive. They will bear interest at the rate of six per centum (6%) per annum, payable semi-annually on the 15th days of March and September in each year. Both principal and interest will be payable at the National Bank of Commerce, New York City.

Proposals must be enclosed in a sealed envelope, marked on the outside "Proposal for Bonds," and addressed to L. H. Mumford, Clerk of the Town of Fremont, North Carolina. Bidders must deposit with the Board of Aldermen before making their bids, or present with their bids, a certified check drawn to the order of the Town of Fremont, upon an incorporated bank or trust company for a sum of money for or in an amount equal to two per centum (2%) of the face amount bonds bid for to secure the

town against any loss resulting from the failure of the bidder to comply with the terms of his bid. No interest will be allowed upon such checks. Checks of unsuccessful bidders will be returned upon the receipt of the bonds. The bonds cannot be sold for less than par and accrued interest. Purchasers must pay accrued interest to the date of delivery.

The bonds will be printed and ready for delivery upon the 25th day of November, 1918, unless different date is mutually agreed upon.

The purchaser or purchasers will be furnished with the opinion of Messrs. McCook & Hoyt, New York City, that the bonds are valid and binding obligations of the Town of Fremont.

The right is reserved to reject any or all bids.

By order of the Board of Aldermen, L. H. MUMFORD, Clerk.

Passed by the District Committee on Capital Issues No. 5 as not incompatible with the national interest, but without approval of legality, validity, worth or security.

Bids close November 18, 1918.

\$75,000 5% Bonds

ROAD DISTRICT NO. 14 OF RAPIDES PARISH, LA.

Notice is hereby given that the Police Jury of the Parish of Rapides, State of Louisiana, offer for sale Seventy-five Thousand (\$75,000) Dollars of five (5%) per cent. road bonds to be issued by Road District Number Fourteen of Rapides Parish, Louisiana, and to be made on the 18th day of November, 1918, in the Police Jury room at the courthouse in the City of Alexandria, Louisiana.

Sealed bids will be received by the Police Jury up to 12 noon November 18, 1918, that being the date and order bid for the sale of such bonds—each bid to be accompanied by a certified check for at least one (1%) per cent. of the face value of the said bonds. Said bids should be addressed to T. C. Wheador, President of the Police Jury of Rapides Parish, Louisiana. The award of said bonds will be at a price not less than par, and the Police Jury of Rapides Parish, Louisiana, reserves the right to reject any and all bids.

T. C. WHEADOR,
President of the Police Jury of Rapides Parish, Louisiana.

\$25,000 6% Bonds

The Town of Murphy, North Carolina, offers \$25,000 Improvement Bonds, 6 per cent., voted to install Hydro-Electric Plant. Address

T. J. HILL, Mayor.

Machinery, Equipment and Supplies WANTED

WANTED SECOND-HAND

Roofing, Iron Siding, Iron Covering of all kinds. Will pay good prices on either large or small lots. Damaged material of the above description from fire jobs, abandoned or dismantled plants will bring good money. Write us and give description.

H. FEITEL HOUSE WRECKING CO.

1800 Tulane Ave. New Orleans, La.

RELAYER RAILS WANTED

200 tons 65 or 70-lb., with angle bars.

NO BROKERS

F. C. LUCAS COMPANY

156 Broadway
NEW YORK, N. Y.

LOCOMOTIVE WANTED

We are in the market for one Shay Locomotive; must be standard gauge, from 42 to 60 tons capacity, with steam pressure not less than 200 pounds, and in strictly first-class second-hand condition, ready for immediate use, for delivery in thirty to forty days.

HAVE MILL COMPANY
RICHTON, MISS.

Drill Sharpener and Concrete Cars Wanted

Leyner Drill Sharpener, in good condition. Eight or ten Side-Dump Concrete Cars, one yard.

RALEIGH GRANITE COMPANY
1003 Citizens' Bank Building
Raleigh, N. C.

WANTED

1000 tons of 60-lb. Relaying Rails, for Southern delivery. Prompt shipment essential.

The Isaac Joseph Iron Co.
525 Reading Road Cincinnati, O

WANTED

1/2, 3/4, 1, and 1 1/2, also 2 and 2 1/2 Steel Wire Ropes, long lengths; 2000 H. P. Water-Tube Boilers; lot 4 and 6" Wrought Pipe; two small-belted and steam-driven Air Compressors; 9x14 or larger Saddle-Tank Locomotive, 3" gauge. All to be second-hand. Give full description.

Lock Box 41 Phillipsburg, N. J.

WANTED

50-36" Gauge Flat Cars, 30,000 lbs. capacity.

J. A. del Solar

722 Woolworth Bldg. New York, N. Y.

SADDLE TANK LOCOMOTIVE WANTED

1-42" gauge saddle tank locomotive from 16 to 20 tons wanted. Must be in good condition. Quote prices and give specifications. Address

The J. G. Tilley Co., Inc.
BRISTOL, VA.

Foundry for Rent

Possession at once. Suitable for job or heavy gray-iron work. Main building brick, with several frame additions. Usual equipment and railroad switch.

ROBINSON PAINT CO.
AURORA, ILL.

WANTED

COLD SAW

42" or 48" Newton or Lucas Make, motor drive. Give condition and best price, stating where same can be inspected.

The American Forge & Machine Co.
Canton, Ohio

We Will Buy

All classes of Contractors

Used Machinery Equipment Rails

Etc.

Terms draft attached
B/L all shipments

The National Equipment Corp'n.
1322 Widener Bldg., Philadelphia, Pa.

CORRUGATED

SHEET IRON

WANTED

ALSO

I-BEAMS

NATHAN KLEIN & CO.

WALKER AND CENTRE STS. N. Y. CITY

Profitable Contractors' Equipment

WONDER

MIXERS, PAVERS, HOISTS, TRENCH PUMPS
BACKFILLERS, AIR COMPRESSORS

Send for Catalog

WATERLOO CEMENT MACH'Y CORPORATION, 135 Vinton St. WATERLOO, IOWA

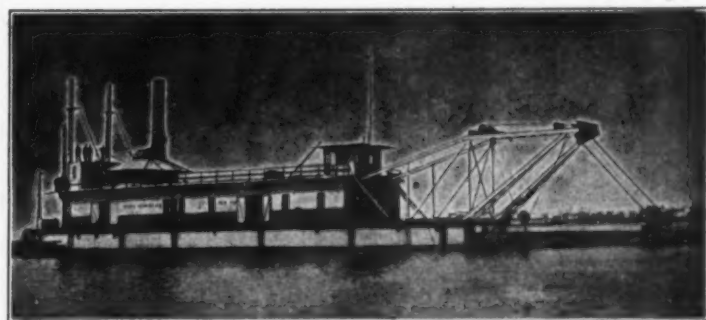
"ADVERTISING values should not be measured simply from the standpoint of getting immediate orders, but in a bigger and broader sense from the standpoint of business building for the future.

"Now is the time for creative advertising—advertising of a creative, educational nature will prove a measure of sound insurance and preparedness for bigger and better future markets. Moreover, this is the time to plan and look forward to organizing and building up defenses against the severe competition which is bound to come, and impressive, educational advertising will prove a powerful factor to this end."

Atlantic, Gulf and Pacific Co.

NEW YORK MANILA, P. I. MOBILE, ALA.

Contractors to the Federal Government



Dredging and Filling, Land Reclamation, Canals and Port Works

River and Harbor Improvements, Deep Waterways and Ship Channels

We are especially equipped to execute all kinds of dredging, reclamation, and port works in Southern waters.

Correspondence invited from Southern officials and corporate and private interests everywhere.

Largest Plant

Longest Experience

Special Advertisements of General Interest.

WANTED STEEL BUILDING

Good, strong, second-hand Steel Building, about 70x130 or 200'. Suitable for foundry, 25 or 30-ton crane capacity. Address

Crescent Foundry Co.
110 Brown Race Rochester, N. Y.

We are dealers in CHESTNUT POLES and POSTS

We offer a few cars, 7' 30' poles @ \$3.75. F. O. B. cars here. Yards on L. & N. & T. C. R. R.

C. E. NORTHRUP & SON
GALLATIN TENNESSEE

SECOND-HAND BAGS FOR SALE

75,000 first-class second-hand bags. Offer same for 15c apiece f. o. b. Roanoke, Va. Write or wire. Will be sold immediately.

Roanoke Scrap Iron & Metal Co.
Box 611 Roanoke, Va.

FOR SALE Skinner Overhead Ten-Acre Irrigation Plant \$1,800.00 on Farm

ENGINE—Fairbanks-Morse, type N. B., 15 horse-power, rev. p. m. 250; good condition; kerosene consumption; belt-shift attachment and beat.

PUMP—Fairbanks-Morse Horizontal Centrifugal, 3" B. H. O. B.; good condition.

PIPING—About 7540 feet 1½" and 1" Galvanized Pipe; about 946 feet 4" and 3" Black Steel Main.

GENERAL—Turning Apparatus, for operating overhead pipe, needing some repairs; about 478 Cast-Iron Pipe Saddles, Pipe Connections, Fittings, etc.

THE DOUBLE-CRESCENT HOG FARM
FELLSMERE, FLORIDA

PUBLIC AUCTION

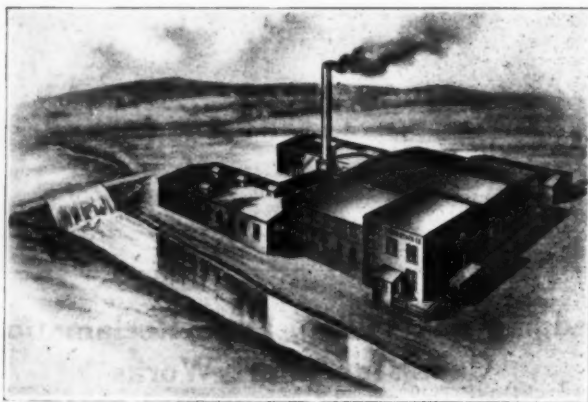
2,000 acres Lower Kittanning, same amount Upper Freeport; unknown quantity Pittsburg Big Vein; 1,300 acres of surface, with large amount mine timber; twenty-five dwellings; located at Newberg, Preston County, W. Va., main line B. and O. R. R. Sale 10 A. M., NOVEMBER 12, 1918, on the property. The right is reserved to reject any and all bids.

For Information Apply

Virginia-Maryland Coal Corporation
104 Marine Bank Building, BALTIMORE, MD.

AN ISOLATED MILL FOR SALE

Suitable for any kind of manufacture
26,000 square feet floor space
34 acres of property, three tenant buildings
2-acre lake pure spring water



Located in Northern New Jersey, adjacent to Central Railroad of New Jersey and D. L. & W. R. R.

Excellent power plant—

Boilers, 350 horse-power
Engines, 150 horse-power
Electric generator 55 k.w. and motor 50 k. w.
Complete electric lighting equipment
1000 feet steel shafting.

100 per cent. sprinkled.

Low insurance rates.

90,000-gallon Hungerford & Terry filter.

Write or call

SUPERIOR THREAD & YARN CO.
334 Fifth Avenue NEW YORK CITY

GOVERNMENT REPRESENTATION

We will represent your interests with the different Government Departments in Washington and Philadelphia, keeping you in touch with the situation at all times. Our plan of operation is entirely consistent with Government requirements and we are operating successfully.

Maple, Moore & Lockwood
SUITE 219

District National Bank Building
WASHINGTON, D. C.
1322 Widener Building
PHILADELPHIA, PA.

We Make a Specialty of Dismantling

Old plants of every description, such as saw-mills, electric-light plants, etc. Our terms are spot cash. Advise us what you have to offer.

THE PIEDMONT IRON & METAL CO.
BALTIMORE, MD.

If you wish to keep posted on the progress of the South, read the **MANUFACTURERS RECORD**
Price \$6.50 a year, six months for \$3.50.

Machine Shop, Wood Working Shop, Sheet Metal and Blacksmith Shop

This plant consists of well equipped Machine Shop, Blacksmith Shop, Sheet Metal Shop, Trucks, Automobiles and all kinds of Raw Material. The land and improvements go with the plant.

The plant is handling a good business at the present time, having the entire Joseph Miami Mining district to draw from. Owners desire to sell on account of other business interests. Can be run with very little overhead expenses; invoices run \$25,000. Make take in a good Kansas or Missouri farm in part exchange. Address

L. E. THORNTON
1300 Rialto Bldg Kansas City, Mo.

ENGINES FOR SALE For Immediate Delivery

One Lane & Bodley Corliss Engine, 100 H. P., Columbian Type.
One Lane & Bodley Corliss Engine, 100 H. P., Columbian Type.
One Lane & Bodley Corliss Engine, 100 H. P., Light Girder Frame Type.
Detailed specifications and price upon application. Address

SOUTHLAND COTTON OIL CO.
PARIS, TEXAS

One Horizontal Flange and Beam Punch

Capacity ¾ through ¾. In working order just overhauled.

CARL HARTMANN CO.
McCartney Bldg. Green Bay, Wis.

BELTING FOR SALE

125 to 150 feet of 18-inch 6-ply Canvas Belting, reinforced with wire. Will submit sample. Will sell for \$1 per foot spot cash, f. o. b. Philadelphia, 2 per cent. cash.

F. H. TAYLOR CO.
45 N. Third St. Philadelphia, Pa.

Reduce Operating Costs.

FOSTER SUPERHEATERS

make direct and easily proven savings in coal, water and plant maintenance.

They eliminate all the troubles and losses caused by wet steam. They make your plant do 15% to 20% more work, without increasing your fuel bills; or carry your present load with 8% to 20% less fuel than now used.

Millions of Horse Power installed to prove this efficiency.

POWER SPECIALTY CO.

111 Broadway, NEW YORK

Boston Philadelphia Pittsburgh Chicago San Francisco

Bargains in Machinery and Supplies.

FOR SALE

1-No. 4 Fay & Egan 42" Band Scroll Saw; will carry 3/4 to 2 1/2" blades.
1-No. 100 Fay & Egan Band Rip Saw with blade.
1-Hopewell 38" Automatic Knife Grinder with one 8" cup wheel.
1-No. H. B. Smith Double Spindle Boring Machine, 4 to 16" on centers.
1-Grinder No. 204 Horizontal Hollow Chisel Mortiser.
1-Terkes & Finn Single End Double Head Tenoning Machine.
1-Royal Invincible 42" Triple Drum Sander.
1-Hall & Brown No. 22 4" Sticker, four sided heads.
1-Fay & Egan Combination Saw and Dado Machine with 2 saws, and two Hutter Dado Heads, etc.
1-Norman 9" Moulder with 4 slated heads.
1-Fay & Egan 12" Moulder, No. 184, complete equipment.
1-Grinder Hollow Chisel Mortiser, No. 231, with one boring spindle.
1-Whitney 30" Single Surfer with section and rolls, etc.
1-Fay & Egan No. 2 Single Head Tenoner.
1-American Variety Saw with counter-shaft, with Universal Tilting Table.
1-Porter 18" Hand Jointer, round head.
1-Fay & Egan No. 277 Double Spindle Shaper and Countershaft, 46x60" table.
1-Double Blower, No. 50, and pipe.
1-Single Blower, No. 50, and pipe.
All in excellent condition; attractive prices; f. o. b. cars High Point, N. C.
Several engines for sale; some boilers.
One 200 Horse High Pressure Water Tube.
A lot of 1" pipe. Lot of 40 and 70-lb. mill.

MACHINERY & SUPPLY CO.
GREENSBORO, N. C.

FOR SALE TRANSFORMERS

One 2500 k.v.a. Allis-Chalmers water-cooled transformer, 3-phase, 60-cycle, 11,000-volt primary to 2200-volt secondary. In use less than a month. Also three 500 k.v.a. Canadian-Westinghouse Company self-cooled transformers, single-phase, 60-cycle, 11,000-volt primary to 2200-volt secondary.

All in first-class condition. Being removed account of changes in generating equipment.

The Central Electric Producing Company
ATHENS OHIO

Trolley Track FOR SALE

2500 ft. No. 4 Coburn Trolley Track; No. 13 gauge; 5 ft. lengths. SUITABLE FOR CONVEYOR SYSTEM

Perfect condition guaranteed

ANCHOR CO.
PAWTUCKET R. I.

WOODWORKING MACHINERY

Extensive Stock of Woodworking Machinery, comprising:
1-Sanders.
1-Band and Jig Saws.
1-Saw Tables (Rip, Cross-cut and Combination).
1-Swing Saws.
1-Single and Double-Spindle Shapers.
1-Single and Double-Head Tenoners.
1-Jointers (Square and Round Head).
1-Mortisers - chain, hollow-chisel and bar types.
1-Horizontal Moulders, 6 to 12".
Also a miscellaneous assortment of "Dodd" and "Advance" Dove-tailing Machines, Dowel Machines, "Whetmore" Glue Heaters, Glue Spreaders, 42" "Whitney" Scraper, Turner Presses, Yankee Whittlers, etc. All modern-in fine condition-attractive prices. Write for complete list.

L. F. SEYFERT'S SONS, Inc.
437 N. 3d St. Philadelphia

ICE PLANTS

1-50-ton Ice Plant, York, steam driven.
1-50-ton Ice Plant, Frick, steam driven.
1-30-ton Ice Plant, Frick, steam driven.
1-50-ton Ice Plant, Vilter, steam driven.
1-15-ton Ice Plant, York, chain driven.
1-5-ton Ice Plant, York, belt driven.

REFRIGERATING MACHINES

1-90-ton Ref. Mch., York, steam driven.
1-80-ton Ref. Mch., Frick, steam driven.
1-80-ton Ref. Mch., Vilter, steam driven.
2-70-ton Refrg. Machines, De La Vergne, steam driven.
3-50-ton Refrg. Machines, steam driven.
1-40-ton Ref. Mch., Wegner, belt driven.
1-40-ton Ref. Mch., Wolf, steam driven.
1-25-ton Ref. Mch., Wolf, steam driven.

ICE TANKS

1-432 Cans, complete, De La Vergne.
1-582 Cans, complete, York.
2-580 Cans each, complete, De La Vergne.
1-460 200-lb. cans, complete.
1-500 200-lb. cans, complete.
1-560 300-lb. cans, complete.

REFRIGERATING PLANTS

1-18-ton Belt or Steam-drive Vilter.
2-10-ton Belt Vilter, upright, enclosed, complete.
1-10-ton Belt, Baker Horizontal, open, complete.
1-5-ton Belt, Remington, complete.
Cans, Receivers, Accumulators, Hoists, Pumps, etc.

BERRYMAN'S Refrigerating Machinery EXCHANGE

The Bourne, PHILADELPHIA, PA.
30 Church Street NEW YORK, N. Y.

TANKS

FOR SALE-3 Large Artificial Gas Tanks; 1 is 115 ft. in diameter, about 345 ft. in circumference and 30 ft. high; 1 is 80 ft. in diameter, about 245 ft. in circumference and 25 ft. high; 1 is 75 ft. in diameter and 22 ft. high. Tanks have double jacket around the sides, and columns for same. All in good condition.

TRI-STATE PIPE CO., Bellaire, Ohio

10,000 Gallon Cyprus Tank
with 50 ft. steel structure
CHEAP.

NATHAN KLEIN & CO.
208 Centre Street NEW YORK

FOR SALE

1-Allis-Chalmers Engine, heavy duty rolling mill type, 225 H. P., 14-foot fly-wheel. Piston 16"x48", Corliss valves. Non-condenser. Excellent condition.
1-Erie Engine, 8"x14" piston. Very good condition.
9-Struthers Wells & Co. steel cylindrical Retorts, Cast-Iron Doors, 11"x5'x7'-10". Excellent condition.
2-150 H. P. Coatsville Boilers, return tubular, 72"-4" Tubes 18' long, 125 lbs. pressure; almost as good as new.
2-1000-gallon Copper Still, with steam coil and live steam, each equipped with about 7' vertical copper tube condensers.
10-Vertical Copper Tube Condensers, with steel jackets.
1-Mitts & Merrill Hog No. 5, together with edging grinder.
Various Steel and Galvanized Iron Tanks, from one to ten thousand gallon capacity. Address

QUEEN CITY IRON & METAL CO. Charlotte, N. C.

300 K. W., 250 VOLT, D. C. GENERATOR

or 300 H. P. Compound-Wound Motor, 340 H. P. M. BRAND NEW Crocker-Wheeler, for immediate delivery. St. Louis shipment. Wire us for price. Also all sizes 25 and 60-cycle Motors.

H. W. WISWELL
122 N. Seventh St. ST. LOUIS, MO.

FOR SALE

1-Steel building 150 ft. long, 122 ft. wide (clear span), 28 to 45 ft. high. Weight of steel approximately 175 tons.
6-Rotary kilns, 6 ft. by 60 ft.
2-Cooper Corliss Engines, 28x48, 100 lbs. pressure.
1-Cooper Corliss Engine, 24x48, R. H., 100 lbs. pressure.
1-Steel Trestle, 165 ft. long, weight 28,245 lbs.
1-Steel Trestle, 205 ft. long, weight 26,920 lbs.
Miscellaneous sizes of Steel Shafting. Steel Bins of various sizes.

MATERIAL CAN BE INSPECTED AT EGYPT, LEHIGH CO., PA.

Giant Portland Cement Company
603-610 Pennsylvania Bldg. PHILADELPHIA, PA.

List of Machinery

FOR SALE

I. One General Electric Feeder Panel. Three double-pole Feeder Switches. One Electrostatic Ground Detector. Two General Electric 100 Amp., 2300-volt, single-phase Recording Watt Hour Meters.
II. One Continuous-Current Generator, No. 111180, Type C. E., Class 4-15-1200, Form G, Amp. 120, K. W. 15, Volts no load 125, Full load 125, speed 1200. General Electric Co. Note: Several coils in armature burnt out.
III. One Westinghouse Type S. K. Transformer, 37 1/2 K. V. A., 60 Cycles, 6600 and 2300 Volts, with variable ratio taps. Style No. 88075, Serial No. 255137.
IV. One Snow Steam Pump, size 6x4x6, No. 72701.
V. One American Feed Water Heater, 512 Improved, No. 100.
VI. One Westinghouse A. C. Generator, 110 K. W., 2300 Volts, 28.8 Amp. per terminal, three-phase, 60 Cycles, 600 R. P. M., Serial No. 679016.
VII. One Exciter, Westinghouse D. C. Generator, 6 K. W., 125 Volts, 48 Amp., 1675 R. P. M., Style No. 31564 c, Serial No. 629686. Belted to
VIII. One Nagle Corliss Engine, No. 205-20206, 16"x36".
IX. 75' of 24" Endless Belt.

All of the above equipment will be sold as a whole or as separate items. For information and prices apply to the

LYKENS VALLEY LIGHT & POWER COMPANY
Williamstown, Pennsylvania

AIR COMPRESSOR FOR SALE

1 1200 cu. ft. Steam-Driven Norwalk Compound Air Compressor, complete, with tank, regulators, lubricators, etc. Guaranteed equal to new.

NATIONAL PRODUCTS CO.
East Liverpool, Ohio

DRYER AND BUCKETS

1-No. 000 Cummer Salamander Dryer-Cylinder, 75 inches by 35 feet, with Buffalo fan, furnace front and grate. In use only three months.
80-Steel Buckets, 30 inches x 12 inches x 17", with head and tail sprockets.
GRIESEMER GRAPHITE COMPANY
ASHLAND, ALA.

Heat Treating Furnaces FOR SALE

Two No. 25 Stewart, Oven-Type, Heat-Treating, Oil-Burning Furnaces; excellent condition. Price \$450 each, f. o. b. La Crosse, Wisconsin.

LA CROSSE TRACTOR CO., LA CROSSE, WIS.

FOR SALE USED EQUIPMENT

1-150 H. P. Horizontal Tubular Boiler, with fixtures complete.
1-125 H. P. Engine, Houston, Stanwood & Gamble make.
1-Pittsburg Feed-Water Heater for 150 H. P. boiler.
1-Steel Derrick, 10-ton capacity, 115' mast, 115' boom, bull wheel.

1-30 H. P. Double-Drum Hoisting Engine for use with Derrick.
1-22 H. P. "American" Hoisting or Slew-ing Engine for handling above Derrick.
1-No. 5 Austin Crusher.

South Side Foundry & Machine Works
Charleston, W. Va.

CORLISS ENGINES FOR SALE

Slightly Used, but in first-class condition.

1-100 H. P. Hamilton Corliss Engine.
1-150 H. P. Hamilton Corliss Engine.

Available for immediate delivery

THE HAMILTON MACHINE TOOL CO.
HAMILTON, OHIO

FOR SALE

2-100 H. P. Fire-Tube Boilers, De Queen, Arkansas.
1-150 H. P. Fire-Tube Boiler, Mena, Ark.
1-35 H. P. Producers' Natural-Gas Engine, Alma, Ark.
1-Arrington & Simms 100 H. P. High-speed Steam Engine, Mena, Ark.
1-50 H. P. Type "Y" Fairbanks-Morse Oil Engine, Ozark, Ark.
1-75 H. P. Type "Y" Fairbanks-Morse Oil Engine, De Queen, Ark.
1-150 H. P. Type "Y" Fairbanks-Morse Oil Engine, De Queen, Ark.
1-Westinghouse 50 K. W., 3-phase, 60-cycle, 2300-volt Generator, Ashdown, Ark.
1-150 K. V. A. Allis-Chalmers 3-phase, 60-cycle, 2300-volt Generator, complete, with exciter and switchboard, De Queen, Ark.
1-50 K. W. Westinghouse Generator, 3-phase, 60-cycle, 2300-volt, complete, with exciter and switchboard, De Queen, Ark.
2-80 H. P. Fire-Tube Boilers, complete, with breeching and singular stack; in good condition, Mena, Ark.
1-150 H. P. Corliss Boiler; first-class condition, De Queen, Ark.

Commonwealth Public Service Co.

311 Barnes Bldg. Muskogee, Okla.

FOR SALE

1-14x36 Lane & Bodley Corliss Engine.
1-Steam Dryer System for Brick Plant of 25,000 per day capacity.
1-McIntosh & Seymour high-speed, 7x9 Engine.
1-Steel & Sons Brick Machine, Pug Mill, Hoisting Drum, Clay Feeder, Pulley Shafting, etc.
1-Dewey Brothers Locomotive.

Jenkins Brick Company
Montgomery Alabama

OIL ENGINES FOR SALE

Four (4) Westman Heavy-Duty 80 H. P. and one (1) 25 H. P. Oil Engines. Never been used. Immediate shipment. These engines are suitable for Cotton Gins, Elevators, Pumping, Electric-Light Plants, etc.

BAY CITY DRIDGE WORKS
2609 Center Avenue Bay City, Mich

Gas Engine and Producer FOR SALE

65-horse-power Columbus Gas Engine, with Smith Gas-Producing Machine. All complete, including pipes, tanks, pumps, pulleys, belts, etc., for complete installation. Apply

B. J. McDermott
535 Tilghman St. Allentown, Pa.

ROTARY CONVERTER

1—200 K. W., 250-275-volt, 1200 R. P. M. Westinghouse, NEW; complete, with switchboard panel and transformers for 2300 or 4000 volts, 3-phase, 60 cycles.

MOTOR GENERATOR SET

1—100 K. W., 250-volt, 850 R. P. M. Generator to a 150 H. P., 3-phase, 60-cycle, 2090-volt Allis-Chalmers Motor, 2-bearing, with starter.

COMPOUND WOUND GENERATORS

125 VOLTS					
Qu.	K. W.	Make.	Type.	Speed.	
1	1/4	Westinghouse	S	650	
2	1	Crocker-Wheeler	L	1500	
1	1 1/2	Crocker-Wheeler	L	1400	
1	2 1/2	Crocker-Wheeler	L	1450	
1	3 1/2	Crocker-Wheeler	L	1200	
1	8 1/4	Crocker-Wheeler	F	1300	
1	8 1/2	Diehl	G	1400	
1	9	Peerless		1400	
1	9 1/2	General Electric	CVC	975	
1	11 1/2	Crocker-Wheeler	D	1250	
1	20	Westinghouse	M	1050	
1	30	Triumph		800	
1	30	Three Rivers		1000	
1	30	Westinghouse	M	950	
1	45	Sprague	D	1000	
1	50	Ft. Wayne	MP	650	
1	55	Westinghouse	S	850	
1	80	Crocker-Wheeler	D	750	
250 VOLTS					
Qu.	K. W.	Make	Type.	Speed.	
1	30	General Electric	MP	750	
1	30	Crocker-Wheeler	D	1200	
1	150	General Electric	CLB	470	
1	200	Westinghouse, 3-wire		500	

GEORGE SACHSENMAIER CO.

Office and Salesrooms: 141-43-45 NORTH THIRD ST.
Warehouse and Shop: 929-30-32 NORTH THIRD ST.

Send for our Catalog.

PHILADELPHIA

PUMPS

for immediate shipment

Owing to export embargoes
we have available

1—16x10 1/2 x 12 Deane Outside End Packed Duplex
Pump; 250-lb. Water Pressure.

5—8x12x6x10 Worthington Compound Duplex Pist-
on Pattern Pumps for 150-lb. Water
Pressure.

All subject to prior sale—Full partic-
ulars on application

WORTHINGTON PUMP AND MACHINERY CORPORATION

115 Broadway, New York

I-99.2

FOR SALE—REAL BARGAIN!**Boilers Boilers Boilers**

A Battery of FOUR USED BOILERS—Together or Separately
Excellent Operating Condition—Immediate Shipment

BOILER No. 1

1—72x18 H. R. T. Steel-Encased Suspension Setting Atlas Boiler, containing 70—4" tubes, 1/2" head. Longitudinal seams are Butt Joint Triple Riveted, strapped inside and outside. Has Extension Front, 5x6-ft. Shaker Grates and Stack 36x60 ft. Pressure now allowed 115 pounds. No Leaks, Bags, Blisters or Patches.

BOILER No. 2

1—72x18 H. R. T. Steel-Encased Suspension Setting Houston-Stamwood-Gamble Boiler, containing 70—4" tubes, 1/2" head. Longitudinal Seams are Butt Joint Triple Riveted, strapped inside and outside. Has Extension Front, 5x6-ft. Shaker Grates and Stack 36x25 ft. Pressure now allowed 115 pounds. No Bags, Blisters, Leaks or Patches.

BOILER No. 3

1—72x18 H. R. T. Lug Set Houston-Stamwood-Gamble Boiler, containing 70—4" tubes, 1/2" head. Longitudinal Seams are Butt Joint Triple Riveted, strapped inside and outside. Has 5x6-ft. Shaker Grates, Full Flush Front and Stack 36x60 ft. Pressure now allowed 115 pounds. No Bags, Blisters, Leaks or Patches.

BOILER No. 4

1—72x18 H. R. T. Steel-Encased Suspension Setting Walsh & Widener Boiler, containing 70—4" tubes, 1/2" head. Longitudinal Seams, Butt Joint Triple Riveted, strapped inside and outside. Has Full Flush Fronts, 5x6-ft. Shaker Grates and Stack 36x60 ft. This Boiler has one patch, 24x36", over grate. Pressure now allowed 110 pounds.

Location above Boilers, Kentucky. Will sell battery of four as above, complete with Header Line, Valves, Fittings, Pump and Heaters, or will sell each Boiler separately.

REAL BARGAINS!

If Interested Use Wires Quick, Our Expense.

Address

WOOD & LANE COMPANY, St. Louis, Mo.

Immediate Delivery**A. C. MOTORS**

3 PHASE 60 CYCLE

No.	H. P.	Volts.	R. P. M.	Type.	Make.
1	150	2200	700	Slip Ring	G. E.
1	75	2200	1200	Sq. Cage	G. E.
1	75	2200	900	Sq. Cage	G. E.
2	60	2200	900	Sq. Cage	G. E.
1	50	220	900	Sq. Cage	G. E.
1	40	2200	1200	Sq. Cage	G. E.
1	35	440	850	Slip Ring	W. E.
10	30	2200	1800	Sq. Cage	G. E.
1	30	2200	1200	Sq. Cage	G. E.
1	25	2200	1200	Sq. Cage	G. E.
1	25	220	1200	Sq. Cage	G. E.
1	25	220	900	Sq. Cage	G. E.
11	20	2200	1200	Sq. Cage	G. E.
2	20	220	1800	Sq. Cage	G. E.
1	20	220	1730	Sq. Cage	A. C.
1	20	220	1200	Sq. Cage	G. E.
1	20	220	900	Sq. Cage	G. E.
2	15	220	1800	Sq. Cage	G. E.
1	15	220	1800	Sq. Cage	W. E.
1	15	220	1800	Sq. Cage	C. W.
1	15	220	1200	Sq. Cage	G. E.
1	15	220	900	Sq. Cage	G. E.
1	10	220	1800	Sq. Cage	G. E.
1	10	220	1800	Slip Ring	W. E.
15	10	220	900	Sq. Cage	G. E.

Others 1/2 H. P. to 10 H. P., 3-phase and single-phase.

Texas Power & Light Company
DALLAS, TEXAS

A GOOD BUNCH OF MACHINERY JUST RELEASED FOR QUICK DELIVERY

CYLINDER BORING MACHINE, 19' floor plate, 68" swing, 8" bar, 4 facing arms, 1 boring heads, 1 electric motor; one CORLISS ENGINE BABBITTING MACHINE; KEYSEATER, Baker Bros.-Colburn, to keyseat 5" width to center of 10' circle; PIT LATHE, 30", with 8" boring bar, 2 cross rails, 4 heads, 1 facing slide; HYDRAULIC WHEEL PRESS, 11' between tie bars, to take 30" between housings, 500 tons nominal capacity, 1 independent steam pump direct connected to press; BORING MACHINE, horizontal spindle, adjustable table; LIPE MILLING MACHINE; CUTTING-OFF LATHE, 3 3/4" hole through center; BORING MILL, Niles, 31" swing, turret; PULLEY MACHINERY—one Streit boring, one Streit turning; ENGINE LATHES—one 28"x19", one 24"x14", one 26"x31", one 24"x17", one 18"x6", one 60"x26"x8", two 16"x8", two 16"x6"; MILLING MACHINE, Brown & Sharpe, KEYSEATER, for 2 1/2" to 8" shafting; SLOTTING, Sellers, 10" stroke; SHAPER for columns; DRILLS: Vertical, 23", 24", 28", 32", and 1—20" sensitive; NUT TAPPER, double head; PIPE THREADERS, 2" and 5"; GRINDER, Gisholt; DRILLING MACHINES for pulley hubs.

THE CLIFTON-PRATT CO., Cincinnati, Ohio

PIPE

ALL SIZES

SECOND HAND

5,000 ft. 8 in. Pipe 25,000 ft. 2 in. Pipe
5,000 ft. 6 in. Pipe 20,000 ft. 1½ in. Pipe
20,000 ft. 2½ in. Pipe 25,000 ft. 1¼ in. Pipe

IMMEDIATE DELIVERY

JAMES F. GRIFFITH

416-24 Moyer St. Philadelphia, Pa.

MENTION MANUFACTURERS RECORD WHEN YOU WRITE

FOR SALE

PIPE

Second-Hand
All Sizes, 1" to 24"

Furnished with new threads and couplings, suitable for every practical purpose.

Also large assortment of Contractors' Equipment, Hoisting Engines, Boilers, Concrete Mixers, etc.; all thoroughly overhauled.

Marine Metal & Supply Co.

167 South St. NEW YORK

PIPE ALL SIZES Bargain Prices.
and New; IMMEDIATE DELIVERIES Second-Hand

8,000' of 12" pipe.
10,000' of 8" pipe.
10,000' of 6" pipe.
10,000' of 4" pipe.
15,000' of 3" pipe.
50,000' of 2" pipe.
50,000' of 1½" pipe.
100,000' of 1¼" pipe.
100,000' of 1" pipe.
Also, a large stock of 16", 18" and 20" pipe.

Pipe & Contractors Supply Co.
3 Dover Street NEW YORK

**Ingersoll-Rand Air Compressor
FOR SALE**

Class N. E., size 10x8, mounted on iron base, for belt or motor drive; good as new; with tank 24"x36". Price \$325.

CARTER LUMBER COMPANY
BEAUFORT, N. C.

IRON AND STEEL PIPE WIRE AND MANILA ROPE MALLEABLE AND CAST FITTINGS

Large stock of good sound SECOND HAND pipe in long straight lengths. No rust pits or extra places; couplings and threads perfect

Largest stock of NEW pipe in the Middle West

OHIO PIPE CO., Works and Yards, FINDLAY, OHIO

FOR SALE

Second-Hand Pipe

Cut and threaded to any desired length. Pipe for steam, water, irrigation or other purpose. Write for prices. We can positively save you money. Your orders solicited. We are always in the market for scrap iron, metals, etc.

B. CASSELL & COMPANY

Chattanooga

Tenn.

FOR SALE

125 Joints Pipe, 20" diameter, about 20' long, 5/16" thickness; weighs approximately 1750 lbs. to the joint.
12 Joints Pipe, 30" diameter, about 20' long, and 14 Joints Pipe, about 10' long, 1/2" thickness; weighs approximately 135 lbs. to the foot.

Each joint has two and three round holes in about the center, measuring 2¼".

Communicate with

GEORGE YAMPOLSKY

P. O. Box No. 305, Clarksburg, W. Va.

WROUGHT IRON PIPE

Thoroughly overhauled, with new threads and couplings. Guaranteed to give entire satisfaction. Pipe cut to sketch. It will pay to correspond with us.

Albert & Davidson, Inc.
Oakland and Kent Sts.
Brooklyn, N. Y.

FOR SALE

One new lime-burning outfit, complete; kiln, cooler, motors, etc.; capacity, 10 tons daily.

One second-hand Cell Drier, 39 50" cells; machine complete.

JOSEPH BANCROFT & SONS CO.
WILMINGTON, DEL.

Pipe - Rails - Tanks

Always carry in stock all sizes of new and used pipe.

Rails 12-lb. to 40-lb.

All sizes of Tanks.

Keystone Pipe & Supply Co.
BUTLER, PA.

HENRY POTTS & CO.

650 Real Estate Trust Bldg., Philadelphia

Will erect, paint or dismantle STEEL BUILDINGS or STACKS. Heavy MACHINERY HANDLED. BOILERS installed. Will purchase for cash PLANTS or MACHINERY. Prompt and efficient service.

1876 THE MACHINERY HOUSE OF THE EAST 1918 FRANK TOOMEY, Inc.

LATHES

10"x1' Climax.
14"x6" New Carroll Jamieson Quick Change.
14"x8" New Carroll Jamieson Quick Change.
14"x6" New Sidney D. B. G. Quick Change, swing 17".
17"x8" New National Quick Change.
17"x8" New Sidney D. B. G. Quick Change, swing 19".
18"x8" Rahn Mayer.
18"x8" Flather.
18"x8" Schumaker Boye.
19"x8" Reed.
24"x20" Reed.
24"x21" Fay & Scott.
24"x21" McCabe Double Spindle.

TURRET LATHES

2"x24" Jones & Lamson Geared Head.
2-21" Davis Boring and Chucking Lathes.
1½" S. & K. Rack Geared Wire Feed.
2-No. 1 Bardon & Oliver Hand Screw Machines.

HORIZONTAL BORING MILLS

4" Bar Niles Knee Type.
2½" Bar Warney & Swasey Knee Type.

MILLERS

No. 2 Kempsmith New Universal, with vertical attachment.
No. 1½ Cincinnati Universal.
No. 1 U. S. New Hand Miller.

SHAPERS

4-14" New Steptoe.
1-14" Steptoe.
6-16" New Steptoe B. G.
2-24" New Steptoe B. G.
16" Bement Traveling Head.

GRINDERS

10"x30" Brown & Sharpe.
10"x24" Iroquois.
10"x20" Bath.

No. 1 New Fraser Universal.
No. 1 New Grand Rapid Universal Reamer and Cutter.
No. 2 Grand Rapid Universal Reamer and Cutter.
No. 100 New Wells Universal Reamer and Cutter.
No. 3 B. & S. Universal Reamer and Cutter.

RADIAL DRILLS

42" Niles Plain Cone Drive.
30" Universal Plain Cone Drive.
42" New Canedy-Otto.

DRILLS

36" New Superior Sliding Head.
32" New Superior Sliding Head.
30" G. & E. Sliding Head.
2-28" New Superior Sliding Head.
2-25" New Superior Sliding Head.
25" New Superior Sliding Head, with tapping attachment.
24" New Superior Stationary Head.
21" New Superior Stationary Head.

20" New Superior Stationary Head.
20" New Champion Stationary Head.

HAMMERS

250-lb. Sellers Single Frame Steam.
250-lb. New Little Giant Belt.
4-100-lb. New Little Giant Belt.
3-50-lb. New Little Giant Belt.
4-25-lb. New Little Giant Belt.

PLANERS

36"x36"x8" Gray, two heads.
30"x30"x10" Pittsburgh, one head.
24"x24"x8" Gray, one head.

NUT TAPPERS

1½" to 2" Six-Spindle National.
¾" to ¾" Five-Spindle National.
3/16" to ¼" Five-Spindle National.

SLOTTERS

10" Newton Power Feed to Rotary Table.

"STEAM AND ELECTRICAL EQUIPMENT"

WATER TUBE BOILERS

1-250 H. P. Babcock & Wilcox Water-Tube Boiler, 150 pounds steam working pressure.

PORTABLE BOILERS

1-40 H. P. Marine Type Portable Boiler, 100 pounds steam working pressure.
1-30 H. P. Erie City Iron Works Portable Return Tubular Boiler, 100 pounds steam pressure.

STEAM TURBINE A. C. SET

1-110 H. P. De Laval Steam Turbine, direct connected to two 37½ K. V. A. General Electric, 2300-volt, 60-cycle, 3-phase Alternators, with direct-connected exciter.

A. C. OIL ENGINE UNIT

1-375 K. W. Fort Wayne 3-phase, 60-cycle, 2300-volt Alternator, direct connected to one pair of Diesel Vertical Oil Engines.

OIL ENGINES

40 H. P. Metz & Weiss Horizontal Oil Engine.
18 H. P. Metz & Weiss Horizontal Oil Engine.

MOTORS

Large stock of A. C. and D. C. Motors, new and used, from ½ to 250 H. P., in stock for immediate delivery.

STEAM TURBINE A. C. SET

1-110 H. P. De Laval Steam Turbine, direct connected to two 37½ K. V. A. General Electric 2300-volt, 60-cycle, 3-phase Alternators, with direct-connected exciter.

A. C. OIL ENGINE UNIT

1-375 K. W. Fort Wayne 3-phase, 60-cycle, 2300-volt Alternator, direct connected to one pair of Diesel Vertical Oil Engines.

DIRECT-CONNECTED UNIT, 220-250 VOLTS

100 K. W. Crocker-Wheeler 250-volt, 8-pole Compound-wound Generator, direct connected to a 14"x21" Hamilton Horizontal Corliss Engine, 150 R. P. M.

DIRECT-CONNECTED UNIT, 110-125 VOLTS

100 K. W. General Electric Compound-wound Generator, direct connected to a Ball & Wood Horizontal Compound Automatic Engine, 250 R. P. M.
50 K. W. Bullock Compound-wound Generator, direct connected to an Erie City Iron Works Horizontal Automatic Engine, 250 R. P. M.

PHILADELPHIA, PA.

127-131 North Third St.

For Sale

- 3-72" x 16' Horizontal Boilers.
1-40-H. P. Donegan & Swift Upright Steam Engine.
Wood Wheel Making Machinery. (Send for list.)
1-600-H. P. Hoppes Feed Water Heater.
1-10 x 12 Worthington Triplex Pump.

The B. F. Goodrich Co.
Dept. 37 AKRON, O.

TRIPLEX PUMP FOR SALE

One Triplex Aldrich Pump, in good condition, with a capacity of 220 gallons of water per minute against 230 feet head.

Round Top Glass and Company, Inc.
14 N. Jonathan St. HAGERSTOWN, MD.

LARGE CORLISS ENGINE FOR SALE

Cylinder, 24x42; fly-wheel, 16 feet diameter; about 200 horse-power. Excellent condition.

CHADEWALD MILLS
3rd and Huntingdon Sts. Philadelphia, Pa.

Boiler and Pumps

FOR SALE—IMMEDIATE DELIVERY.
1-78"x18" Return Tubular Boiler, with 160 new 3" charcoal iron tubes; good for 125 lbs. pressure and equipped with Murphy Automatic Smokeless Stoker.
1-7x4½x8 Snow Duplex Boiler Feed Pump.
1-6x4x6 Buffalo Duplex Boiler Feed Pump.
1-5½x3½x5 Snow Duplex Boiler Feed Pump.
All pumps in first-class condition.

DUNKIRK LAUNDRY CO.
DUNKIRK, N. Y.

FOR SALE

Two 350 and one 275 H. P. Edgemoor and Heine Boilers; four 354 H. P. B. & W. Boilers, complete, 200 lbs. steam; two 250 and one 300 H. P. Stirling Class F Boilers, almost new, with new tubes, complete; two B. & W. Boilers, 525 H. P. each, with stokers and hand-fired; one 78" Stack, 150 ft. long, heavy metal; two 100 H. P. Horizontal Return Tubular Boilers, 125 lbs. steam; 7x10 Saddle-Tank Locomotives, 24" and 30" gauge; 12x14 Horizontal Automatic C. C. Engine; two carloads fine 3, 4, 6 and 8" wrt. Pipe; 15,000 ft. 4" wrt. Pipe; 1500 4" Boiler Tubes, 16 and 18 ft. long; lot 6" Cast-Iron B. & S. Pipe; 10,000 ft. ¾ Galvanized and Bright NEW Wire Ropes, long and short lengths; 60,000 ft. ¾, ¾, ¾, ¾ and 1" Plow Steel Wire Ropes, long and short lengths; two reels 1½ Plow Steel Wire Ropes, 5000 ft. long each; 60 reels 1" to 2½" diameter Wire Ropes, different lengths, fine condition; two 250 H. P. Locomotive-Type Boilers, 150 lbs. steam, all complete; four 8" Automatic Steam Valves; 1000 H. P. NEW Closed Heater.

Easton Machinery Co.
Drake Bldg. Easton, Pa.

BOILERS

15-264 H. P. Babcock & Wilcox.

6-250 H. P. Stirling.

Each equipped with stoker.

Insured for 175 lbs. pressure.

WIRE FOR PRICES.

CHARLES I. HILLS

800 National Bank Bldg. Wheeling, W. Va.

TRIPLEX PUMP

GOULD'S 7x8 TRIPLEX PLUNGER PUMP.

Good for 130 lbs. pressure or 300' head. Capacity 250 G. P. M., belt driven; fine condition. Also 5x8 Steel Pressure Tank.

T. J. LANE EQUIPMENT COMPANY
14 Bushnell Building Springfield, Ohio

ENGINES FOR SALE

Two Single-Cylinder Ellis Corliss Steam Engines; size of cylinder, 22x42; speed, 65 R. P. M. Both Engines overhauled and in good condition.

Burlington Grain Elevator Co.
206 Merchants Exchange, ST. LOUIS, MO.

If you wish to keep posted on the progress of the South, read the **MANUFACTURERS RECORD**
Price \$6.50 a year, six months for \$3.50.

EQUIPMENT FOR SALE

- 3 72"x18' Horizontal Return Tubular Boilers; butt-strap construction.
3 72"x18' Horizontal Return Tubular Boilers; standard construction.
1 72"x16' Horizontal Return Tubular Boiler; standard construction.
3 66"x16' Horizontal Return Tubular Boilers; standard construction.
1 17"x24" Four-Valve Atlas Automatic Engine.
1 14"x34" Hoffman-Billings Corliss Engine; RH girder-frame type.
1 22"x42" Vilter RH Corliss Engine; girder-frame type.
1 30,000-gal. Steel Tank mounted on an 80' steel tower.
1 450-ton-capacity Steel Storage Bin.
1 1½-yd. Vulcan Steam Shovel mounted on traction wheels.
1 No. 0 Thew Full Revolving Steam Shovel; ¾-yd. dipper; equipped with shipper shaft; mounted on traction wheels.
1 Chambers Disintegrator.
3 Chambers Pug Mills.
1 7' Dry Pan.

WE BUY AND SELL MACHINERY OF ALL KINDS.

Let us know your wants.

MAY & TURNER CO.
1503 Healey Bldg.

ATLANTA, GEORGIA

72"x18' H. R. T. Boiler

Butt Strapped—Quadruple Riveted
USED 8 MONTHS

Will carry a high pressure. Complete with all fixtures—fittings including:

1-250 H. P. Massillon Open Feed Water Heater

THE MARKMAN ENGINEERING CO.
111 W. MONROE ST. CHICAGO, ILL.

HEATING BOILER FOR SALE

A slightly-used cast-iron Sectional Boiler, made by H. B. Smith Company, having a capacity of 9600 square feet of steam radiation. Boiler complete, with trimmings.

The Fitzpatrick & Hoepfner Company
COLUMBUS, OHIO

14 Cu. Ft. RANSOME
CONCRETE MIXER
With Gas line Engine
THE HERFURTH ENGINE CO., Inc. incorporated
Alexandria, Va.

H. P.	Make.	Pressure.	Each.
1-500	B. & W.	150	\$7500
2-350	Heine	150	\$2500
1-300	Heine	150	\$2500
2-264	B. & W.	160	\$4000

POWER MACHINERY EXCHANGE, Inc.
1 Mont. m r Street JERSEY CITY, N. J.

(2) 150 H. P. Geary Water Tube BOILERS

Insured 150 lbs. with Honey Stokers, Breeching and Stack.

The Herfurth Engine Co., Inc.
ALEXANDRIA, VA.

OIL ENGINE

For Sale—Arkansas point. One 50 H. P. type "Y" vertical Fairbanks-Morse Oil Engine. Two years' service. Discontinued account of transmission line.

Commonwealth Public Service Co.
311 Barnes Building, MUSKOGEE, OKLA.

FOR SALE

One 12"x36" Green Engine in A-1 condition for immediate shipment.

Cocker Machine & Foundry Co.
GASTONIA, N. C.

BARGAINS

1-150 H. P. Return Tubular Boiler complete.
1-1280 ft. Sullivan WB-2 Air Compressor.
1-14x36 Hamilton Corliss Engine.
1-10x14 Davenport 36" Saddle Tank Locomotive.
Send us your inquiries.

HODGSON MACHINERY CO.
Knoxville, Tenn.

We own and offer for prompt shipment

BOILERS

- 3-300 H. P. Stirling Water Tube Boilers, all fittings and fixtures, 8 years old, F. & C. Inspection, 150 lbs. fittings and fixtures, 110 lbs.
1-40 H. P. Ames locomotive-type Boilers, all fittings and fixtures, 100 lbs.

HEATER

1-750 H. P. Erie City Closed Type, brass tubes, all necessary fittings

STACK

1-54"x80' Guyed Steel Stack, complete with guy wires and cast-iron

The Hawkins-Hamilton Co., Inc.
Richmond, Va.

BOILERS

For Quick Shipment

- 5-250 H. P. Wickes Vertical Water-Tube Boilers, 150 lbs. pressure.
1-300 H. P. Wickes Vertical Water-Tube Boiler, 150 lbs. pressure.
2-425 H. P. B. & W. Boilers, 180 lbs. pressure.
6-250 H. P. B. & W. Boilers, 150 lbs. pressure.
1-250 H. P. B. & W. Boiler, 125 lbs. pressure.
2-210 H. P. B. & W. Boilers, 125 lbs. pressure.
2-500 H. P. Keeler Boilers, 160 lbs. pressure.
1-400 H. P. Stirling Boiler, 150 lbs. pressure.
1-261 H. P. Stirling Boiler, 150 lbs. pressure.
2-150 H. P. Stirling Boilers, 150 lbs. pressure.
1-425 H. P. Heine Boiler, 160 lbs. pressure.
3-72"x18' Tubular Boilers, 125 lbs. pressure.
1-72"x18' Tubular Boiler, 125 lbs. pressure.
2-66"x16' Tubular Boilers, 100 lbs. pressure.
5-66"x16' Tubular Boilers, 135 lbs. pressure.
2-54"x14' Tubular Boilers, 100 lbs. pressure.

And other makes and sizes.

STEEL SMOKE STACKS
1-14x36 Corliss Engine.
1-6-ton Whiting Cupola and Blower.
1800 Gasoline Engines, New.

J. F. DAVIS
1108 Harris Trust Building CHICAGO, ILL.

MARINE BOILER FOR SALE

75-Horse-power Scotch Marine Boiler, 120 lbs. pressure, 120 lbs. pressure, \$1250.

Strasburg Steam Flouring Mills
STRASBURG, VA.

BOILERS FOR SALE
2-55 H. P. Boilers, H. R. T., 54"x18", 150 lbs. steam.
2-150 H. P. Boilers, H. R. T., 78"x18", 150 lbs. steam.
2-125 H. P. Boilers, H. R. T., 72"x18", 150 lbs. steam.
1-Manning Boiler, 150 H. P., 125 lbs. pressure, complete with stack.
1-Stack, 24" dia. x 60' long, self-supporting.
JOHN M. GREENE, 261 Drexel Bldg., Philadelphia.

FOR SALE Second-Hand Equipment

- 5-150 H. P. Boilers (high pressure).
2-150 H. P. Bessemer Gas Engines.
1-165 H. P. Bessemer Gas Engine.
2-110 H. P. Bessemer Gas Engines.
1-25 H. P. Bessemer Gas Engine.
2-888-ft. Ingersoll-Rand Compressors (belt driven).
200 tons of 8-lb. "T" Rails.
75,000 ft. second-hand Pipe (all sizes).
BANKARD LUMBER & MACHINERY CO.
JOPLIN, MO.

Heating Boilers

1-54"x18' Fire Box Heating Boiler.
1-72"x18' Kewanee Fire Box Heating Boiler.
Fine condition. Practically as new. Immediate delivery.

PFANNMUELLER ENGINEERING CO.
1733 First National Bank Bldg

BOILER AND PUMP

FOR SALE—No. 1 Type "M" Vertical Water-Tube Boiler, complete; 150 lbs. power, 150 lbs. working pressure. In good condition, as reported by inspector. Worthington Pump, type "B", size 14x16, capacity 500 gallons per minute.

CASWELL TRAINING SCHOOL
KINSTON, N. C.

BARGAINS

ENGINES

- 150 H. P. 16x15 McEwen Automatic, with extra head.
200 H. P. Skinner Automatic.

BOILERS

- 4-72x18 Lapped Joint, Erie City Boilers.
4-66x16 Lapped Joint, Union Iron Works.
3-72x18 Lapped Joint, Union Iron Works.
4-72x18 Butt Strapped, Erie City Boilers.

ENGINE GENERATOR SETS

- 100 K. W. Westinghouse, 250 volts, direct connected to twin cylinder vertical Westinghouse Engine.
150 K. W. Jeffrey, 250 volts, belted to 18x19 McEwen Engine.
250 K. W. Ridgway, 250 volts, direct connected to 28x24 Ridgway Automatic Engine.
150 K. W. Western Electric, 250 volts, direct connected to 18x36 Monarch Corliss Engine.
60 K. W. General Electric, 250 volts, belted to one 12x12 Erie City Engine.
50 K. W. Fairbanks-Morse, 250 volts, direct connected to 85 H. P., 3 cylinder vertical Fairbanks-Morse Gas Engine.
30 K. W. Westinghouse, 250 volts, direct connected to one 50 H. P., 2 cylinder Westinghouse Gas Engine.
125 K. V. A., 3-phase, 60-cycle, 2200-volt Fairbanks-Morse, belted to 150 H. P. 3 cylinder Fairbanks-Morse Oil Engine.
55 K. W. Westinghouse, 115 volts, direct connected to one 85 H. P. 2 cylinder Marinette Gas Engine.
10 K. W. Lincoln, 125 volt, belted to 20 H. P. St. Marys Gas Engine.

HOIST

- 25 H. P. Byers, 3-drum Steam Hoist; extra drum for operating bull wheel, 80' jin pole, 60' boom, 1000' cable, ¾-yard clamshell bucket. No boiler. Never used.

SHOVEL

- 1—Class 80 Atlantic Steam Shovel, 3½-yard bucket, complete.

THE MOYERS-BENNETT CO.
SCHMULBACH BLDG. WHEELING, W. VA.

BOILERS

- 4—450 H. P. Sterling Water Tube Boilers, 175 lbs.
 3—400 H. P. Altman & Taylor Water Tube Boilers, 150 lbs.
 2—400 H. P. B. & W. Water Tube Boilers, 165 lbs.

LOCOMOTIVE TYPE BOILERS

- 1—40 H. P.; 1—65 H. P.; 1—125 H. P.; 1—150 H. P.

LOCOMOTIVE CRANES

- 1—20-Ton Industrial, 48 ft Boom.
 1—20-Ton Orton & Steinbrenner.

**HOISTING ENGINES, DERRICKS, SHOVELS,
DUMP CARS, CONTRACTORS' EQUIPMENT**

WE PURCHASE COMPLETE PLANTS—
 What have you for sale?

Sun Power Equipment Company
 COMMERCIAL TRUST BLDG., PHILADELPHIA, PA.

WHEELAND CIRCULAR SAW MILL

Capacity 20,000 feet per day of 10 hours

All machinery complete with belting, saws, ample power, blacksmith tools, lumber carts, etc. Write for price and list of machinery and blue print of mill.

H. P. WYMAN LUMBER COMPANY, Inc.

BRISTOL

VIRGINIA

HIGH SPEED**STEAM HOISTING ENGINE**

Double-cylinder, single-drum, high-speed Hoisting Engine; built especially for handling material elevators, etc., but suitable for any kind of hoisting or haulage where high speed is desired.

It will hoist 1500 pounds at the rate of 400 feet a minute.

Drum 16 inches in diameter and 23 1/2 inches long between flanges, mounted on the crankshaft, and operated by a cone friction. Cylinder size 7x10; has a 39x85 boiler and ample brake surface.

Price on request—and it is a real bargain price.

Immediate shipment.

AMERICAN HOIST & DERRICK CO.

ST. PAUL, MINN.

**BOILERS
FOR SALE**

- 160 H. P. Heine, water tube, butt strapped, new 1911; used 6 years; guarantee Maryland Casualty Insurance, 180 lbs.
 150 H. P. horz. tubular, 72"x18", butt strapped, 36"x55", No. 12 stack, full front; guarantee Hartford Insurance, 125 lbs.
 60 H. P. Pennsylvania, portable return tubular, on skids, butt strapped, 125 lbs. pressure; used only six months.

Hackley Morrison

Richmond,

Virginia

**COMPLETE
POWER PLANT**

Consisting of:

- 1—Monarch Corliss Engine, 18x36, direct connected to 150 K. W., 240-volt Western Electric D. C. generator.
 1—60 K. W., 250-volt General Electric Generator, 325 R. P. M., belted to a 12x12 Erie City engine.
 1—72x18 Muskegon Boiler, with full fronts, grates and fixtures, butt strapped, triple riveted.
 Cochran Feed Water Heater, Feed Water Pump, Oiling System and Switchboards.

For immediate delivery.

—THE—

Moyers-Bennett Co.

Schulbach Bldg., Wheeling, W. Va.

WATER TUBE BOILERS

- 1—250 H. P. Heine.
 1—300 H. P. Erie City.
 2—150 H. P. Babcock & Wilcox.
 2—100 H. P. Cross-drum Babcock & Wilcox.
 1—200 H. P. Heine.
 1—150 H. P. Heine.
 1—60 H. P. Vertical Butt-strapped High-pressure Tubular.

TANKS

- 4—60"x20", made of boiler plate.
 2—Open-top Tanks, 7' wide, 24' long, 30" deep.

AIR COMPRESSORS

- 1—16x16x18 Ingersoll-Sargent.
 1—12x12x12 Ingersoll-Sargent.
 1—700 H. P. Cochran Cast-shell Feed-water Heater.

NORTON MACHINERY COMPANY
 CINCINNATI OHIO

FOR SALE

- 1—600 H. P., 150 lbs. pressure, Internally-fired Boiler, with 3 Jones Underfeed Mechanical Stokers.
 1—No. 8 Austin Gyratory Crusher; fine shape.
 1—6"x16" Ball or Tube Mill; in fine shape.
 1—6"x60" Rotary Direct-fired Dryer.
 1—90 H. P. Titusville Locomotive Type Boiler.
 1—13"x15" D. C. double-friction drum Mine Hoist.
 1—7"x12" Porter, 8-ton, 24" gauge Locomotive.
 1—10"x16" Porter 36" gauge Locomotive.
 1—9"x10" Lidgerwood D. C., D. F. D. Hoist, with Boiler.
 2—1200 G. P. M., motor-driven Centrifugal Pumps.

CHAS. T. LEHMAN, Birmingham, Ala.

**SHAPER AND PLANER
FOR SALE**

One Whitney No. 8 Double-Spindle Vertical Shaper, with bronze conical bearings, adjustable countershaft, regular fittings.
 One Falls No. 43 24" Undercut Planer, with power feed, regular fittings.
 Both machines practically new.
 Not needed here.

Allright Manufacturing Co.
 RURAL HALL, N. C.

BLOWER FOR SALE

FAN AND COILS.—1 full-house, left-hand top horizontal, discharge New York Blower, 10 ft. high, complete with self-contained engine; also Heating Coils, containing approximately 5000 lineal feet of 1" pipe, all in good condition and subject to immediate shipment. Price \$1000.

OHIO MALLEABLE IRON CO.
 COLUMBUS, OHIO

If you wish to keep posted on the progress of the South, read the **MANUFACTURERS RECORD**
 Price \$6.50 a year, six months for \$3.50.

**REBUILT MACHINERY
ALL IN STOCK**

- BOILERS:** 2—72x18; 2—72x16; 2—66x16; 1—60x16; 1—54x14; 2—48x16; 2—48x14.
BOILER TUBES: 30,000 feet of 4-in.; 10,000 feet of 3 1/2-in.; 5000 feet of 3-in.
ENGINES: 14x16 Buckeye; 14x21 Lane & Bodley; 14x18 Chandler & Taylor; 14x18 Lane & Bodley Corliss; 12x18 Atlas; 11x13 Russell; 10x14 Chandler & Taylor; 9x12 new Nagle; 10x12 Erie; 9x14 Allfree; 7 1/2x14 Brownell.
MOTOR GENERATOR SET: 1—100 K. W. Morgan-Gardner, 250-volt, D. C. Generator, direct connected to a 150 K. V. A. General Electric 3-phase, 60-cycle, 2300-volt, 600 R. P. M. synchronous motor, with switchboards, instruments, etc.
GENERATORS—60-CYCLE: 175 K. W. Westinghouse, 3-phase, 2200-volt at 900 R. P. M.; 150 K. W. G. E., 3-phase, 2200-volt at 600 R. P. M.; 85 K. W. Allis-Chalmers, single phase, 2200-volt at 900 R. P. M.; 90 K. V. A. Electric Machinery Company 3-phase, 2200-volt at 1200 R. P. M.; 75 K. W. Fairbanks-Morse, 240-volt, 900 R. P. M.
MOTORS—3-PHASE, 60-CYCLE: 150 H. P. new General Electric, 440-volt, 720 R. P. M.; 100 H. P. new General Electric, 440-volt, 720 R. P. M.; 100 H. P. new General Electric, 440-volt, 900 R. P. M.; 75 H. P. new General Electric, 220-volt, 900 R. P. M.; 50 H. P. new Allis-Chalmers, 440-volt, 900 R. P. M. (allip ring); 40, 30, 2—25 H. P., all new General Electric, 220-volt, 1200 R. P. M. Also other sizes.
MOTORS—D. C., 250 VOLTS: 100 H. P. Allis-Chalmers at 600 R. P. M.; 55 H. P. General Electric at 900 R. P. M.; 30 H. P. Northern at 600 R. P. M.; 2—25 H. P. Fischer at 500 R. P. M.; 1—30 H. P. Crocker-Wheeler at 750 R. P. M.; 15 H. P. Phoenix at 1750 R. P. M.; 10 H. P. Jantz & Leist at 900 R. P. M.; 3 H. P. at 1350 R. P. M., direct connected to iron-frame swing saw.

POWER PLANT MACHINERY AND ACCESSORIES

Send us your requirements

THE RANDLE MACHINERY CO.

1734 Powers St.

Cincinnati, Ohio

Manufacturers Record the Medium for Machinery Advertisements

Boston Iron and Metal Co.

Buyers of Scrap-Iron and Metals

Complete Plants Purchased

BALTIMORE

MARYLAND

**FOR
WIN THE WAR SERVICE**

AND IMMEDIATE DELIVERY, WE OFFER A No. 1 APPARATUS
 PARTIAL LIST AS FOLLOWS

BOILERS

- 1—1400 H. P. Complete Boiler Plant, consisting of:
 4—350 H. P. Stirling, Class N, No. 16, 190 lbs. steam pressure, 150 degrees superheat Boilers, complete, with all piping, valves, breeching, heaters, pumps, etc.
 2—400 H. P. A. & T. B. & W. Steel Header, 175-lb., re-erection, triple riveted butt joint, with Green chain-gate stokers.
 1—500 H. P. B. & W. Steel Header, 185 lbs. Allow., Butt Joint, Double Riveted, with Chain Gate Stokers.
 1—557 H. P. Stirling Lap Seam Drum, 150-lb. allow.; perfect condition, hand fired.
 7—72-in. x 18-ft. triple riv., butt joint, 150-lb. allow., hand fired; stacks and all fittings.
 1—250 H. P. Steel Header A. & T. B. & W. type Boiler, 175 lbs. Allow., Triple Riveted, Butt Joint Drums. Hand Fired.

60-CYCLE UNITS

- 2—600 K. W. General Electric, 60-cycle, 3-phase, 2200-volt, R. F., Alt., dir. con. to H. D. cross-compound Corliss engine.

25-CYCLE UNITS

- 2—300 K. W. Westinghouse, 25-cy., 3-ph., 440-v., R. F. Alternator, dir. con. to cross-comp. Allis-Chalmers, heavy-duty, double-ported, double-eccentric engines.
 1—350 K. W. Westinghouse, 25-cy., 3-ph., 6600-v., R. F. Alternator, dir. con. to heavy-duty Ball automatic engine.
 2—1000 K. V. A. Westinghouse, 25-cy., 3-ph., 440-v. Alternator, with cross-compound, heavy-duty Corliss engines.

PAUL STEWART & COMPANY
 CINCINNATI, OHIO

DIRECT CURRENT UNITS
 1—1600 K. W. General Electric, 250 D. C. Generator, direct connected to heavy-duty Cross-Compound Corliss Engine.

TURBINES

- 1—1000 K. W. (old rated actual capacity approximately 1500-1800 K. W.) Westinghouse Horizontal Condensing Turbo Alternator Unit, 60-cy., 3-ph., 4400-v., 1800 R. P. M., complete, with surface condensers, piping, etc., to make complete installation.
 1—9300 K. V. A. Westinghouse-Parsons Condensing Turbo Alternator, 80 per cent. P. F., 60-cy., 3-ph., 2200-v., 1800 R. P. M., complete, with condensers.
 1—5000 K. W. Allis-Chalmers (New) Turbo Alternator, without condensers, 80 per cent. P. F., 60-cy., 3-ph., 2200-v., 1800 R. P. M., complete, with condensers.
 1—1500 K. W. Westinghouse-Parsons Condensing Turbo Alternator (Old Rated) approximately 2500 K. W. capacity, 60-cy., 2-ph., 2400-1800-v., with Water condenser.

FREQUENCY CHANGER SET
 1—1000 K. W. Westinghouse Frequency Changer Set, 60-cy., 3-ph., 2200-v., 30-cy., 6600-v., on sub-base and shaft, with dir. con. exciter.

ROTARIES

- 1—250 K. W. Westinghouse, 25-cy., 3-ph., Rotary, 370-v., A. C.; 550-v. D. C., with 3—100 K. V. A. transformers, 6000 primary panel, etc.
 1—600 K. W. G. E., 60-cy., 3-ph., 440-v. A. C.; 600-v. D. C., with transformers 13,200-v. primary, panel, etc.

MOTORS

- 1—1200 H. P. General Electric, 25-cy., 3-ph., 2200-v., 250 R. P. M. Induction Motor, complete, with shaft extended both ends.
 1—250 H. P. Burke, 60-cy., 2 or 3-ph., 2200-v. Synchronous Slip-Ring Motor, with panel, coupled to 24-in. Platt rotating pump, Twenty Million G. P. M., 45-ft. head.

THE O'BRIEN MACHINERY CO. MACHINE TOOLS

LATHES.

- 2-16"x8" South Bend.
- 2-15"x6" South Bend.
- 2-13"x5" South Bend.
- 80"x18" Bement Lathe.
- 26"x18" McCabe double spindle.
- 32"x18" Harrington.
- 20"x9" Lehman, 3 step cone, quick change gear.
- 18"x9" Lehman, 3 step cone, quick change gear.
- Several smaller lathes, new and used, in stock.

DRILLS.

- 6-20" Wheel and Lever, plain.
- 6-20" Back Geared, Power Feed.
- 2-24" Superior, stationary head.
- 1-24" Hamilton, sliding head.
- Large stock of new and used smaller drills.

PRESSES.

- No. 78 1/2 Bliss geared press, 25" throat, weight about 6500 lbs.

ELECTRICAL AND POWER EQUIPMENT

We list below few selections from our stock for immediate shipment.

MOTORS.

220-Volt, Direct Current.			
No.	H. P.	Make.	Speed.
1	400	General Electric	200
2	200	Burke	375
1	100	Keystone	480
1	75	Keystone	825
1	50	Electro Dynamic	500
1	40	General Electric	1350
1	25	General Electric	1150
1	25	General Electric	1200
2	20	General Electric	1500
1	20	Westinghouse	1700
1	15	Allis-Chalmers	1170
1	10	General Electric	650
4	7 1/2	General Electric	950
3	5	Triumph	1300

Large stock smaller sizes.

DIRECT-CONNECTED UNITS.

- 2-500 K. W., 250-volt, D. C. Burke, Erie vertical engine.
- 1-600 K. W. A., 220-volt, 3-phase, 60-cycle Ridgway, with Ridgway engine.
- 1-250 K. V. A., 220-volt, 2-phase Crocker-Wheeler, with Erie Ball engine.
- 1-125 K. W., 220-volt, D. C. Northern Reeves Vertical Engine.
- 1-40 K. W., 250-volt, D. C. Ridgway, with Ridgway engine.
- 1-25 K. W., 220-volt, D. C. General Electric, with Erie Ball engine.

- No. 53 Toledo arch press, fly wheel type.
- No. 2 1/2 Henderson deep throat, fly wheel type.

MISCELLANEOUS.

- 2-Pratt & Whitney Vertical Surface Grinders with rectangular magnetic chucks.
- 16" Wright Shaper.
- 20" Smith & Mills Shaper.
- 16" Smith & Mills Shaper.
- 14" Smith & Mills Shaper.
- 24"x24"x6" New York Safety Planer.
- 34"x27"x7" Matawan Planer.
- Covel back-geared Milling Machine; feeds are 18"x6"x15".
- 8" Geo. Oil heavy-gear hand-bending Brake.
- 9x9 Peerless Hispeed Hack Saw.
- 6x6 Peerless Hispeed Hack Saw.

MOTORS.

220-440-Volt, 3-Phase, 60-Cycle.			
No.	H. P.	Make.	Speed.
1	200	Allis-Chalmers (slip-ring)	600
1	75	General Electric	900
1	75	General Electric	1200
2	40	General Electric	900
1	40	General Electric	1200
2	30	General Electric	900
2	25	General Electric	1200
1	25	Wagner	900
2	25	General Electric	1800
2	20	General Electric	900

PUMPS.

Large stock Steam and Centrifugal Pumps.

OIL ENGINES AND GENERATORS

- 3-65 K. W., 220-volt Triumph, with De La Vergne engines.

AIR COMPRESSORS.

- 2-18x18 1/2x24 Ingersoll-Rand, steam driven.
- 1-10x10x10 Laidlow-Dunn-Gordon.
- 1-12x12 Bury Motor, drivenless motor. Also smaller sizes.

THE O'BRIEN MACHINERY CO.

119 North Third Street
Long Distance Bell Telephone, MARKET 2121

PHILADELPHIA, PA.
Call Address, O'BRIEN, PHILADELPHIA

HARRIS BROTHERS COMPANY, CHICAGO Offer From Stock

Complete Crushing Unit

- 1-Complete Crushing Outfit, consisting of one Class K Allis-Chalmers gyratory crusher No. 6, 1 No. 3 crusher, complete with elevator, approximately 50' and three-section screen, with hoisting and driving apparatus, arranged for either steam engine or electric motor.
- Also, 1 No. 6 McCully Heavy Duty Belt-Driven Gyratory Crusher.
- 1-No. 4 Champion Portable 4-Jaw Stone Crusher, with elevator, mounted on wheels, 9x15" opening.

Fire Brick

- 300,000 Fire Brick—Common—Silica—Christy—St. Louis and Buckeye; Indiana shipment.

Coil Chain

- A large quantity in all sizes up to 1 1/2 in.

Cable

- 500,000 ft. of Cable; sizes from 1 1/2 to 2 in.

Hoisting Engines

- 1-7x10 double cylinder, single drum Mundy Hoisting Engine, skeleton type.
- 3-4 1/2x6 double cylinder, single drum Stroudsburg Hoisting Engines.
- 1-8 1/2x10 double cylinder, double drum Flory Hoisting Engine, skeleton type.
- 1-9x10 double cylinder, double drum Russell Wheel & Foundry Co. Engine.
- 1-Double cylinder, double drum Flory Hoisting Engine, skeleton type, cylinders 8 1/2x12.

Direct Connected Outfit

- 1-Triumph 150 K. W., 250-volt, D. C. Electric Generator, with 16x21 Chase 4-valve engine, complete with switchboard.
- 1-125 K. W. 125-volt D. C. Generator, direct connected to 18x18 Ames automatic center-crank engine, with switchboard and all equipment.

Locomotives

- 2-20" gauge Steam Locomotives.
- 1-24-ton Shay geared, standard gauge Locomotive.
- 1-60-ton, 4-wheel, standard gauge Locomotive.
- 1-60-ton American & Baldwin.
- 1-65-ton American & Baldwin.
- 1-6-wheel American Locomotive, 61 and 63-ton, 180 lbs. pressure.

Gravel and Push Cars

- 25-20-yard-capacity, standard gauge, Gravel Cars.
- 25-Standard-gauge Push Cars, 10' long, suitable for stone and other heavy handling.

Dump Cars

- 30 Western & Oliver type, all-steel, 12-yd. Dump Cars, which we offer for sale or lease. These cars are located at various points in the East.

Overhead Traveling Cranes

- 1-4-ton, 2-motor Electric Crane, 20' span, 220-volt.
- 2-75' Steel Plate Girders, equipped complete with 20-ton capacity hand-power trolley.
- 1-25-ton hand-power Traveling Crane.

Surface Condensers

- 1-3000' Baragwanath.
- 1-700' Worthington.
- 2-400' Worthington.
- 2-400' Baragwanath.

Steel Buildings

- 1-Steel Frame Building, 45' 6" clear span, 80' long, 10' columns to bottom chord.
- 1-Steel Building, 41' 6" clear span, 80' long, 45' column to bottom chord.
- 1-Steel Frame Building, 43' 4" clear span, 100' long, 20' column to bottom chord.
- 1-Steel Frame Building, 50' clear span, 352' long, 39' column to bottom chord.
- 1-Steel Frame Building, 75' clear span, flat truss, 160' long, 40' column to bottom chord.

Hydraulic Riveting Outfit

- 1-Chambersburg 150-ton Hydraulic Riveting Outfit, consisting of 1 hydraulic riveter, 12" 8" gap with pump, hydraulic hoist, crane, accumulator and container.

Gullotine Shear

- Brand new Covington Gullotine Vertical Gate Shear; capacity 36" between housings; stroke 1 1/2"; shears 1 1/2" plate; clutch control; arranged for motor drive. Will sell with or without motor. Shear is brand new, and is offered for prompt shipment; subject to prior sale.

Wire, or write for full details.

Our Latest Machinery Bulletin MR-306 sent free on request.

HARRIS BROTHERS COMPANY

CHICAGO

Derricks

- 1-Wood Guy Derrick, with mast approximately 14x14 at base, 10x10 at top, with boom 80' long, 10x10.
- 1-Wood Guy Derrick, with mast approximately 12x12, 60' high, with boom 60 to 80' long; 10x10; fitted with brass pushed sheaves and cable.
- 1-Guy Derrick, with mast 14x14 at base, 10x10 at top, with boom 10x10, approximately 60' long, complete, with all irons, turntable, double block sheaves.

Rails

- 1800 tons 70-lb.
- 250 tons 85-lb.
- 50 tons 40-lb.
- Complete with angle bars and spikes for immediate delivery.
- 6 miles 36" gauge Portable Track, with steel ties, 20 and 25-lb.

Locomotive Cranes

- 1-30-ton O. & S., 8-wheel, 42 1/2' boom.
- 1-40-ton Bucyrus, 8-wheel, 55' boom.
- 1-2-ton, 4-wheel railway type, 110-volt storage battery Electric Locomotive Crane; boom 15', full revolving, with motors and controllers.
- 1-15-ton, 8-wheel American.

Steel Tanks

- 1-12,000-gal. Storage Tank.
- 2-11,000-gal. Storage Tanks.
- 1-8,000-gal. Storage Tank.
- 2-6,500-gal. Car Tanks.
- 2-3,000-gal. Car Tanks.
- 1-8x12' Air Tank; double riveted, 5/8" material.
- 1-60"x24" Pressure Tank, 5/8" material.
- 2-60"x14" Tanks; double riveted, 5/8" plate.
- 25-16"x16" Pressure Tanks.
- 1-20' dia., 135' high Water Tower Tank, made of plates 3/8", 1/2", 5/16" and 3/4".

Air Compressors

- 1-24x26x16 1/2x30 Two-Stage Sullivan, 1850 cubic ft.
- 1-10x16x18x10 Two-Stage Clayton, 550 cubic ft.
- 1-14x16x9x10 Rand, 400 cubic feet.
- 2-10x10x10 Single-Stage Gardner.
- 2-1250-ft. cap. Ingersoll-Rand, steam driven, Imperial type.

Water Pipe

- | | |
|-------------------|---------------|
| 50,000 ft. 1 1/2" | 15,000 ft. 4" |
| 35,000 ft. 1 1/4" | 8,000 ft. 8" |
| 65,000 ft. 2" | 2,000 ft. 10" |
| 45,000 ft. 2 1/2" | 3,000 ft. 12" |
| 8,000 ft. 3" | 1,500 ft. 12" |
- 13,000 ft. 1 1/2" double, extra strong, seamless Steel Tubing; good for 5000 lbs. pressure, fitted with Briggs threads each end, and couplings.

20" Pipe

- 15 miles of 20" Spiral Riveted A. & R. Pipe, with flanged compression connections. This pipe is made of No. 8 gauge; is in A-1 condition. Delivery can be made immediately.

Wire Cable

- Several thousand feet of Steel Wire Cable, ranging in sizes from 3/4 to 3". Send us a memorandum of your requirements.

Large Pumps

- 1-12x20x12x18, outside packed, Platt Iron Works.
- 2-12x20x10x24 Snyder-Hughes.
- 2-16x10 1/2x14 Knowles, outside packed.
- 10-6x4x6 Worthington Duplex.
- 2-12x20x24 Worthington Vacuum Pumps.

Complete Power Plant

- 4-72x18" Triple-Riveted Butt-Strapped Boilers, with Sturtevant mechanical draft, coal-handling and weighing apparatus.

Boilers

- 7-250 H. P. Cahall Vertical Boilers, Rooney stokers, 160 lbs. pressure.
- 2-300 H. P. Atlas Water-Tube, shaker grates, 150 lbs. pressure.
- 2-150 H. P. Scotch Marine, 125 lbs.
- 5-100 H. P. Marine Boilers, 100 lbs.
- 2-125 H. P. Marine Boilers, 125 lbs.
- 2-80 H. P. Firebox Boilers, 80 lbs.
- 4-72x18", triple riveted, butt strapped, 125 lbs. pressure.
- 2-66"x16", triple riveted, butt strapped, 125 lbs. pressure.

Punches and Shears

- 1-Heavy-duty Gate Shear, with 21" blade, 11" throat, cap. cutting up to 1 1/2" plates, spur gear, 42" dia. by 10" face.
- 1-Lennox Rotary Bevel Shear; cuts 3/4" plate.
- 1-Wiener Steel Plate I-Beam Shear for 15" I-beams.
- 1-Single End Punch, 27" throat, 5/8" through 3/4".
- 1-12" Boltermakers' Flanging Clamps.

Corliss Engines, Water Tube Boilers and Direct Connected Unit

DIRECT CONNECTED UNIT

- (1) Engine, Rice & Sargeant, Simple, Non-Condensing, 30x48", 750 H. P. Generator, Westinghouse, D. C., 10-pole, 550 V., 90 R. P. M., 500 K. W.

ENGINES

- (3) Allis-Corliss, Simple, Non-Condensing, 30x60".
- (1) Huettelman & Kramer, cylinder 20x42, Right-hand Corliss Engine.

GENERATORS

- (3) Westinghouse, D. C., 4-pole, 550 V., 500 K. W.

LEATHER BELTS

- (3) 53", 140' long, Double Leather Belts.

BOILERS

- (8) Campbell & Zell Water Tube Boilers, 12 tubes high and 12 tubes wide, nominal rating 275 H. P. each; set in batteries of two each, steam pressure 150 lbs. each.
- (1) Campbell & Zell Water Tube Boiler, 9 tubes high and 12 tubes wide, nominal rating 225 H. P., pressure 150 lbs.

PUMPS

- (3) Worthington Duplex Feed, 9"-5 1/2"x10".
- (1) Knowles Deep Well, 12"-7 1/4"x36".
- (1) Westinghouse 9 1/2" Air Pump.
- (2) Centrifugal Circulating, Direct-driven, 12" Pumps, each driven by a 70 H. P. General Electric 550-volt direct-current motor, speed 500 R. P. M.
- (2) Horizontal 13x8" Worthington Dry Vacuum Pumps, direct driven by a 12 H. P. General Electric 500-volt direct-current motor, speed 300-R. P. M.

MISCELLANEOUS

- One (1) Berryman Feed Water Heater, 5"x17".
- One (1) Locke Damper Regulator, complete with Damper Operating Mechanism.
- One (1) 15-ton Traveling Crane, 70' span, with Hand-operated Bridge and Hoist.
- Two (2) Perfection Oil Filters, 100-gallon capacity each.

BOSTON IRON & METAL CO.

PRATT and FREMONT STS.

BALTIMORE, MD.

FOR SALE FIRST CLASS Used Machinery

Logging, Railroad, Sawmill, Planing Mill, Cableway, Power Plant, Yard, Fire Protection, Electric, Engineering, Club House, Hotel and Ice-Plant Machinery and Equipment, including following and many other items: **BAKE OVEN**—Burton Four-Shelf Improved. **CABLEWAY**—Lidgerwood 12x12 Cableway Engine, Steel Tower and Cables. **CARS**—30" gauge, All-Steel Industrial Cars. **DRYKILNS**—Complete two-room Drykilns. **DRAW SAW**—Hill No. 7 Steam Draw Saw, with Steam Hoist. **ELECTRIC**—Six-Panel Marble Switchboard, with instruments. Also lot of miscellaneous Electrical Supplies. **GRINDER**—Covel No. 90 Band Saw Grinder, with floor stands and filing clamp. **ICE PLANT**—Remington three-ton plant. **LOG JACKER**—Extra Heavy Spur and Bevel Gear Drive. **LOG TURNER**—Hill Friction Drive Overhead. **MOLDER**—Woods No. 107 Inside Molder. **PLANNER AND MATCHER**—American No. 229, with jointing attachment. **POOL TABLES**—Brunswick-Balke Standard, with cues, balls and racks. **PREPARATOR**—Kreutzer Steel Cylinder Preparator. **RESAW**—Six-foot, left-hand Diamond Horizontal. **RANGE**—Burton No. 36 Double Hotel Range. **SHINGLE MACHINE**—Challoner 10-block. **SPRINKLER**—Grinnell Automatic Sprinkler System.

If interested, write for complete booklets and prices covering above and many other items.

Santee River Cypress Lumber Co.
FERGUSON, S. C.

FOR SALE

One Complete 14 Ton
RAW WATER

ICE PLANT

Except power. Only run three months. Horizontal belt-driven Compressor. A real bargain for a quick buyer. Address

Daytona Public Service Co.
DAYTONA, FLORIDA

EXTRA LARGE MOTORS (NEW)

2-650 H. P. Allis-Chalmers, 440-volt, 3-phase, 60-cycle. One at 163 R. P. M., the other at 200 R. P. M. (Both synchronous speed.) Induction wound rotor, mill type, 2-pedestal bearing, and stator supported by continuous cast-iron base. These have been on order over one year. Now ready to ship. Complete Electrical Specification on request.

2-500 H. P. Lincoln, 900 R. P. M. constant rating. Type 1 X. W., 440-volt, 3-phase, 60-cycle, slip ring, with 2 steel reduction gears. Type S4 (6 to 1), flexible couplings. Used only eight months.

Write for my complete list of New and Used Steam, Electric and Mining Equipment. I have motors in stock from 1 to 150 H. P. A. C. and 5 to 60 H. P. D. C., 230 and 550 volts.

HOWARD B. PAYNE

House Building Pittsburgh, Pa.

Immediate Shipment From Stock

100 H. P. 220-volt 865 R. P. M. Type AN Allis-Chalmers.
75 H. P. 220-volt 865 R. P. M. Type AN Allis-Chalmers.
50 H. P. 220-volt 860 R. P. M. Type HF Westinghouse.
50 H. P. 440-volt 850 R. P. M. Type AN Allis-Chalmers.
50 H. P. 220-volt 900 R. P. M. Type H Fairbanks-Morse.
40 H. P. 440-volt 1200 R. P. M. Type H Fairbanks-Morse.
40 H. P. 220-volt 1200 R. P. M. Type B Fairbanks-Morse.
25 H. P. 220-volt 1150 R. P. M. Type CW Westinghouse.
30 H. P. 220-volt 850 R. P. M. Type K Robbins & Myers.
25 H. P. 220-volt 850 R. P. M. Type K Robbins & Myers.
All Motors 3-phase, 60-cycle, complete.

GEO. F. MOTTER'S SONS
Electrical and Steam Engineers
YORK, PA.

Tampa Machinery Exchange
TAMPA, FLA.

Buy, Sell and Exchange Machinery
of All Kinds

WRITE US YOUR WANTS

DELIVERY NOW SECOND-HAND TOOLS

36" x 36" x 24" L. W. Pond Planer.
Two heads on cross rail.

Landis 10"x30" Plain Grinder with Universal Headstock.
Two Brown & Sharpe No. 3 26" Automatic Gear Cutters.

Ingle Automatic Gear Tooth Chamfering Machine.
24" Cincinnati High-Speed Driven Upright Drill with Gear Box and Tapping Attachment.

Universal Swivel Table for Radial Drill.
No. 1 Diamond Bench Grinder on pedestal.

24" Rockford Wet Tool Grinder.

Globe Tool Sharpener.

Dry Grinder for two 12" wheels.

15 H. P. Monitor Planer Control without motor, 110-volt, D. C., first-class condition.

D. C. MOTORS

1 7½ H. P. Westinghouse, 220-volt constant.
1 5 H. P. Reliance, 220-volt constant.
1 ¾ H. P. General Electric, 110-volt variable.
1 5 K. W. Triumph, 250-volt Generator.

The Lodge & Shipley Machine Tool Company
CINCINNATI OHIO

1-42-in. 3-Drum Invincible Sander.
1-42-in. 3-Drum Columbia Sander.
1-60-in. 3-Drum Columbia Sander.
1-48-in. H. B. Smith Endless-Bed Sander.
2-24-in. 2-Drum Egan Sander.
1-24-in. 1-Drum Boss Sander.
1-30x 6 Fay 6-Roll Double Surfer.
1-28x 8 Woods 6-Roll Double Surfer.
1-28x 8 Rogers 6-Roll Double Surfer.
1-30x12 996 6-Roll Double Surfer.
2-30x 6 Egan Cabinet Planers.
1-27x 7 Smith Cabinet Planer.

Woodworking Machinery of All Kinds
Engines and Boilers

THE CLEVELAND BELTING & MACHINERY CO.
1922 Scranton Road Cleveland, O.

First-Class Used Machinery

For Every Conceivable Kind of

**BORING MACHINES
DRILLS
GEAR CUTTERS
HAMMERS
LATHES
MILLERS
PLANERS
SHAPERS
SAWS
SHEARS
TURRENT LATHES, Etc.**

CONSULT

HENRY PRETISS & CO., Inc.
NEW YORK, N. Y.

PUMPS FOR SALE

Two STILWELL-BIERCE, SMITH-VAILE Compound Duplex Pumps; steam cylinders, 14-in. and 20-in. diameter; water end 10-in. diameter; 15-in. stroke; brass lined on water end and outside center packed; steel piston rods; suction 12-in., discharge 10-in. Built for 250 lbs. working pressure. Weight 17,000 pounds. Can furnish suction and discharge connections, including foot valve, check and gate valves, pipe and fittings. Address

The J. B. McCrory Company
1403 Third National Bank Bldg.
ATLANTA, GA.

FOR SALE

8000 ft. 900,000 C. M. Single Conductor, 61-Wire, 3/32 Rubber, Triple Braid, 600-Volt

CABLE

This is used material, but in good second-hand condition, in random lengths up to 400 ft. each.

PRICE \$1.00 PER FT.

THE CONNECTICUT LIGHT & POWER CO.
WATERBURY, CONN.

SECOND HAND BRICK MACHINERY

FOR SALE—Cheap for Cash
f. o. b. cars Slidell, La. Second-Hand Brick Machinery; Chambers No. 8 Pug Mill, Brick Machine, Automatic Cutter, all good condition. Address

SOUTHERN CREOSOTING CO., Ltd.
Slidell, La.

Saw Mill Machinery For Sale

Large stock Engines, Boilers and all kinds of Saw Mill Machinery, including Shingle, Lathe and Planing Mill Machinery, Filing Room Equipment, Machine Tools, Railroad Equipment, etc.

HARTFELDER-GARBUTT MACHINERY COMPANY
EQUIPMENT AND SUPPLIES FOR
MILLS AND RAILROADS

SAVANNAH,

GEORGIA

FOR SALE - BARGAIN Long Wall Mining Machinery

Immediate Shipment—F. O. B. Colorado

2-CH 6 Sullivan Long Wall Mining Machines, 250-volt. Direct Current, 36" track gauge, 4½-ft. cutter bar, feed 16"; self-propelling steel trucks; width over all 30"; height over all 30". In first-class operating condition.

Price \$2200 each f. o. b. Colorado.

If interested, use wires quick—our expense.

Address

WOOD & LANE CO.

ST. LOUIS, MO.

IRON AND STEEL PULLEYS FOR SALE

Lot of slightly used iron steel pulleys—all sizes.

Foltz Mfg. & Supply Co.
Hagerstown, Md.

TRUSS SPAN

FOR SALE—One E 21 Coopers, Load Standard-gauge, Through Pin Truss 147 feet long; approximate weight, 3½ tons. For particulars, apply to

LEROY SPRINGS, President
LANCASTER SOUTH CAROLINA

New Stock FOR SALE at Moving Prices

BOLTS—RIVETS—BARS

Lot 1—Track Bolts.....	13,000	1" x 3½" to 6"
Lot 2—Round Head Bolts.....	2,000	1" x 8" to 12"
Lot 3—Flat Head Bolts.....	3,000	1½" x 8" to 12"
Lot 4—Flat Head Bolts.....	3,000	1" x 8" to 12"
Lot 5—Machine Bolts.....	6,000	1½" x 8" to 12"
Lot 6—Machine Bolts.....	17,000	1½" x 8" to 12"
Lot 7—Machine Bolts.....	12,000	1" x 8" to 12"
Lot 8—Machine Bolts.....	5,000	¾" x 8" to 12"
Lot 9—Machine Bolts.....	25,000	¾" x 8" to 12"
Lot 10—Csk. Head Bolts.....	25,000	¾" x 8" to 12"
Price Entire Lot 4c. lb.; less quantities 5c. lb.		
Lot 11—Heat Treated Machine Bolts.....	1,500	1½" x 8" to 12"
Price Entire Lot 10c. lb.		
Lot 12—Button Head Rivets, 135 kegs, ½", ¾", 1", 1½", 2", 2½", 3", 3½", 4", 5", 6", 8", 10", 12", 14", 16", 18", 20", 22", 24", 26", 28", 30", 32", 34", 36", 38", 40", 42", 44", 46", 48", 50", 52", 54", 56", 58", 60", 62", 64", 66", 68", 70", 72", 74", 76", 78", 80", 82", 84", 86", 88", 90", 92", 94", 96", 98", 100", 102", 104", 106", 108", 110", 112", 114", 116", 118", 120", 122", 124", 126", 128", 130", 132", 134", 136", 138", 140", 142", 144", 146", 148", 150", 152", 154", 156", 158", 160", 162", 164", 166", 168", 170", 172", 174", 176", 178", 180", 182", 184", 186", 188", 190", 192", 194", 196", 198", 200", 202", 204", 206", 208", 210", 212", 214", 216", 218", 220", 222", 224", 226", 228", 230", 232", 234", 236", 238", 240", 242", 244", 246", 248", 250", 252", 254", 256", 258", 260", 262", 264", 266", 268", 270", 272", 274", 276", 278", 280", 282", 284", 286", 288", 290", 292", 294", 296", 298", 300", 302", 304", 306", 308", 310", 312", 314", 316", 318", 320", 322", 324", 326", 328", 330", 332", 334", 336", 338", 340", 342", 344", 346", 348", 350", 352", 354", 356", 358", 360", 362", 364", 366", 368", 370", 372", 374", 376", 378", 380", 382", 384", 386", 388", 390", 392", 394", 396", 398", 400", 402", 404", 406", 408", 410", 412", 414", 416", 418", 420", 422", 424", 426", 428", 430", 432", 434", 436", 438", 440", 442", 444", 446", 448", 450", 452", 454", 456", 458", 460", 462", 464", 466", 468", 470", 472", 474", 476", 478", 480", 482", 484", 486", 488", 490", 492", 494", 496", 498", 500", 502", 504", 506", 508", 510", 512", 514", 516", 518", 520", 522", 524", 526", 528", 530", 532", 534", 536", 538", 540", 542", 544", 546", 548", 550", 552", 554", 556", 558", 560", 562", 564", 566", 568", 570", 572", 574", 576", 578", 580", 582", 584", 586", 588", 590", 592", 594", 596", 598", 600", 602", 604", 606", 608", 610", 612", 614", 616", 618", 620", 622", 624", 626", 628", 630", 632", 634", 636", 638", 640", 642", 644", 646", 648", 650", 652", 654", 656", 658", 660", 662", 664", 666", 668", 670", 672", 674", 676", 678", 680", 682", 684", 686", 688", 690", 692", 694", 696", 698", 700", 702", 704", 706", 708", 710", 712", 714", 716", 718", 720", 722", 724", 726", 728", 730", 732", 734", 736", 738", 740", 742", 744", 746", 748", 750", 752", 754", 756", 758", 760", 762", 764", 766", 768", 770", 772", 774", 776", 778", 780", 782", 784", 786", 788", 790", 792", 794", 796", 798", 800", 802", 804", 806", 808", 810", 812", 814", 816", 818", 820", 822", 824", 826", 828", 830", 832", 834", 836", 838", 840", 842", 844", 846", 848", 850", 852", 854", 856", 858", 860", 862", 864", 866", 868", 870", 872", 874", 876", 878", 880", 882", 884", 886", 888", 890", 892", 894", 896", 898", 900", 902", 904", 906", 908", 910", 912", 914", 916", 918", 920", 922", 924", 926", 928", 930", 932", 934", 936", 938", 940", 942", 944", 946", 948", 950", 952", 954", 956", 958", 960", 962", 964", 966", 968", 970", 972", 974", 976", 978", 980", 982", 984", 986", 988", 990", 992", 994", 996", 998", 1000		

Lot 13—Csk. Head Rivets, 80 kegs, ½", ¾", 1", 1½", 2", 2½", 3", 3½", 4", 5", 6", 8", 10", 12", 14", 16", 18", 20", 22", 24", 26", 28", 30", 32", 34", 36", 38", 40", 42", 44", 46", 48", 50", 52", 54", 56", 58", 60", 62", 64", 66", 68", 70", 72", 74", 76", 78", 80", 82", 84", 86", 88", 90", 92", 94", 96", 98", 100", 102", 104", 106", 108", 110", 112", 114", 116", 118", 120", 122", 124", 126", 128", 130", 132", 134", 136", 138", 140", 142", 144", 146", 148", 150", 152", 154", 156", 158", 160", 162", 164", 166", 168", 170", 172", 174", 176", 178", 180", 182", 184", 186", 188", 190", 192", 194", 196", 198", 200", 202", 204", 206", 208", 210", 212", 214", 216", 218", 220", 222", 224", 226", 228", 230", 232", 234", 236", 238", 240", 242", 244", 246", 248", 250", 252", 254", 256", 258", 260", 262", 264", 266", 268", 270", 272", 274", 276", 278", 280", 282", 284", 286", 288", 290", 292", 294", 296", 298", 300", 302", 304", 306", 308", 310", 312", 314", 316", 318", 320", 322", 324", 326", 328", 330", 332", 334", 336", 338", 340", 342", 344", 346", 348", 350", 352", 354", 356", 358", 360", 362", 364", 366", 368", 370", 372", 374", 376", 378", 380", 382", 384", 386", 388", 390", 392", 394", 396", 398", 400", 402", 404", 406", 408", 410", 412", 414", 416", 418", 420", 422", 424", 426", 428", 430", 432", 434", 436", 438", 440", 442", 444", 446", 448", 450", 452", 454", 456", 458", 460", 462", 464", 466", 468", 470", 472", 474", 476", 478", 480", 482", 484", 486", 488", 490", 492", 494", 496", 498", 500, 502, 504, 506, 508, 510, 512, 514, 516, 518, 520, 522, 524, 526, 528, 530, 532, 534, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556, 558, 560, 562, 564, 566, 568, 570, 572, 574, 576, 578, 580, 582, 584, 586, 588, 590, 592, 594, 596, 598, 600, 602, 604, 606, 608, 610, 612, 614, 616, 618, 620, 622, 624, 626, 628, 630, 632, 634, 636, 638, 640, 642, 644, 646, 648, 650, 652, 654, 656, 658, 660, 662, 664, 666, 668, 670, 672, 674, 676, 678, 680, 682, 684, 686, 688, 690, 692, 694, 696, 698, 700, 702, 704, 706, 708, 710, 712, 714, 716, 718, 720, 722, 724, 726, 728, 730, 732, 734, 736, 738, 740, 742, 744, 746, 748, 750, 752, 754, 756, 758, 760, 762, 764, 766, 768, 770, 772, 774, 776, 778, 780, 782, 784, 786, 788, 790, 792, 794, 796, 798, 800, 802, 804, 806, 808, 810, 812, 814, 816, 818, 820, 822, 824, 826, 828, 830, 832, 834, 836, 838, 840, 842, 844, 846, 848, 850, 852, 854, 856, 858, 860, 862, 864, 866, 868, 870, 872, 874, 876, 878, 880, 882, 884, 886, 888, 890, 892, 894, 896, 898, 900, 902, 904, 906, 908, 910, 912, 914, 916, 918, 920, 922, 924, 926, 928, 930, 932, 934, 936, 938, 940, 942, 944, 946, 948, 950, 952, 954, 956, 958, 960, 962, 964, 966, 968, 970, 972, 974, 976, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000

CENTRAL TRACK SUPPLY CO., 1080 Kenton St., SPRINGFIELD, OHIO

MACHINERY FOR SALE

BULL RIVETER

1—W. H. Wood Hydraulic Riveter, complete, with accumulator, high-pressure pump, container and hydraulic hoist. Riveter has 8" 3" gap.

ROTARY BEVEL SHEAR

1—Lennox Rotary Bevel Shear, size No. 2, with cutting discs or shear blades Capacity, ¾" steel.

RADIAL DRILL

1—American, 42" arm, 36" swing, cone drive, worm movement. Swinging and tilting table.

BENDING ROLLS

1—set 10' 6" Power Bending Rolls with reversing mechanism, hand raising and lowering attachments. Top roll 12" diameter, bottom rolls 8" diameter, double pulley drive.

COMBINATION PUNCH AND SHEAR

1—No. 4 Long & Allstater, 5" throat.

F. MAYER

1601 Monadnock Building

CHICAGO, ILL.

Railroad and Contractors' Equipment and Supplies.

Contractors' Machinery FOR SALE

1—Thew Shovel, ½-yd. bucket, mounted on standard-gauge trucks.
 1—Revolving 316 Crane, boom 75', mast 82', with 8½"x10 D. C. D. D. American hoisting engine, complete with guy lines.
 1—100 square ft. Wheeler Condenser, with vacuum pump and connections.
 1—15"x3" Screw-Cutting Lathe.
 1—24"x16" G. W. Fields Lathe.
 1—19"x13" Mundy D. D. Hoisting Engine.
 1—24"x16" Lidgerwood D. D. Hoisting Engine.
 1—24"x16" Lidgerwood S. D. Hoisting Engine.
 1—24"x16" Flory D. D. Hoisting Engine.
 1—24"x16" Mundy D. D. Hoisting Engine.
 1—24"x16" Ransome Concrete Mixer, with and without engine and buckets.
 1—17"x4 Atlas Engine.
 1—14"x20 Sturtevant R. H. Engine.
 1—22"x36 Stearns R. H. Engine.
 1—60 H. P. New York Safety C. C. Automatic Engine.
 1—12"x12" O. & S. Vertical Engine with out-board bearing.
 1—5½"x25" York High-Speed Automatic Engine.
 1—20 H. P. B. & W. Water-Tube Boilers.
 1—22"x18" Tubular Boilers, 125 lbs. pressure.
 1—22"x16" Tubular Boilers, 125 lbs. pressure.
 1—22"x16" Tubular Boilers, 100 lbs. pressure.
 1—22"x16" Tubular Boilers, 100 lbs. pressure.
 1—24"x14" Tubular Boiler, 5"x14", 125 lbs. pressure.
 1—20 H. P. Penna. Firebox Boiler, 100 lbs.
 1—20 H. P. Vertical Boiler, 150 lbs. pressure.
 1—17"x24 Baldwin Rod Locomotive, 56½" gauge.
 1—10x16 Baldwin Rod Locomotive, 36" gauge.
 Other sizes Locomotives, different types and gauges.
 1—Chambersburg 800-pound Steam Hammer.
 1—30"x30"x4" American Planer.
 1—150-ton Hydraulic Press.
 All sizes and types of Pumps.
 Sawmill Machinery of every description.
 1—Complete Sash, Door and Blind Factory.
 1—Complete Sprinkler System, with tower and tank.

MACHINERY EXCHANGE CO.
NEW ORLEANS, LA.

EQUIPMENT FOR SALE

1—Cummer Asphalt Plant.
 1—Five-ton Tandem Kelly Springfield Roller.
 1—Ten-ton Tandem Kelly Springfield Roller.
 1—Ten-ton Macadam Kelly Springfield Roller.
 1—Smith-Valle Duplex Pump 20x18, steam, 10x18 water.
 15,000 ft. 2" Wrought-Steel Pipe.
 1—Five-ton Pierce Arrow Automatic Pump Trucks.
 12—Wagons, Watson Automatic Dump.
 1—27-E Foote Concrete Mixers.
 1—7 Boom Stiff-Leg Derrick, Industrial Irons.
 1—18" Swing American Quick-change Lathe.
 1—Cincinnati Plain Milling Machine.
 1—Planer.
 1—40-lb. Boyer Air Hammer.
 1—40-lb. Boyer Air Hammer.
 1—6x12 Air Compressor.
 1—Electric Drill.
 1—Electric Drill.
 1—4" Morris Sand and Gravel Pumping Outfit, complete.
 1—115 H. P. Oil Engine.
 Power Hoists.
 Traction and Discharge Lines.
 Complete Screen and Steel Overhead Hoppers.
 1—Barge.
 L. C. EVERIST, Inc. Sioux City, Iowa

60 HORSE-POWER

Gasoline Hoisting Engine

1—Cylinder Gasoline Hoisting Engine, 60 horse-power, corresponding with an 8½"x10 steam hoisting engine; has two drums and two winch heads. Drums are 14 inches in diameter and 27 inches long between flanges. Has two speeds. Single-line pulling capacity 8000 pounds; has Bosch magnet and a good carburetor; also gasoline tank and water-cooling tank.
 Is provided with clutches which permit the engine to be started without operating the hoisting mechanism.
 A powerful, well-built engine, on which we can give immediate shipment.

AMERICAN HOIST & DERRICK CO.
ST. PAUL, MINN.

Double Cableway Equipment

For Sale, for river or quarry use, consisting of two 2¼" diam. slightly used Steel Wire Cables about 850 ft. long each, attached by socket blocks to four 2½" galvanized-steel anchorage cables and clamps for same; 2 Anchorage Chains of 1½" and 2½" diam. iron, 70 and 95 ft. long; one 42" Steel Double Car Cage, 28 ft. long; one 4-wheel Cable Carriage. A lot of 3" diam. Bolts for socket blocks, and two large adjusting Turnbuckles for equalizing cables. One Beck Twin Engine for wire rope, 12x14 cylinders. All or part for sale.

GLEN LUMBER COMPANY
POTTSVILLE, PA.

Railroad Equipment Mine Locomotives and Machines Locomotives

THOMAS F. CAREY CO.

120 Liberty St. New York, N. Y.

Combination Steam Shovel; Locomotive Crane

Type B Erie Combination Steam Shovel and Locomotive Crane; new, from shops in 1916; mounted on traction wheels, has a 32-ft. steel locomotive-crane boom and ¾-yd. Williams clam-shell bucket; also has the standard slipper shaft steam shovel boom, with ¾-yd. dipper. Standard-gauge car wheels can be used on the same frame. Revolving and self-propelling. Guaranteed condition. Price f. o. b. subject to prior sale, \$8250.

Wire or write

LEONARD F. SMITH

La Porte Indiana

FOR SALE

One Vulcan one-yard Steam Shovel, Tractor type, 22' boom. Price \$3250.
 Two Atlas Boilers, operated as a unit, size 56"x20", with 14-6" tubes, complete with all fixtures and stack. Price, complete, \$2000.
 One Brownell Boiler, 54"x14", complete except stack. Price \$400.
 AIR COMPRESSOR, Duplex, 10x12x14, made by the Hall Steam Pump Co., steam driven, in the very best used condition. Price, complete, \$1500.
 One Fay & Egan 8' Band Sawmill, complete with boilers, engine, carriage, nigger and filling-room equipment. Price, complete, \$3500.
 Hoisting Engine, complete with boiler and D. C., 8½"x10, O. & S. make, single drum, with one winch head, about 1000 ft. wire rope. Price \$1250.
 Hoisting Engine, complete with boiler, D. C., 64"x8, D. D., O. & S. make. Price, complete, \$625.
 One Buffalo Heater, complete with 72" fan, coils, and as good as NEW. Suitable for medium-size factory. Price, complete, \$300.
 Wood and Iron Working Machinery, Shafting, Pulleys and Belting. Write for a complete list, or send us your inquiries.
A. A. McLAUGHLIN & COMPANY
403-5 Bell Block Cincinnati, Ohio

OVERHAULED RAILROAD, CONTRACTORS AND MINE EQUIPMENT FOR SALE FOR RENT

STEAM SHOVELS
 1—50 Atlantic Type, Bucyrus; NEW.
 1—18 B Osgood Traction, ½-yard dipper.
 1—No. 3 Thew Revolving, 1½-yard dipper.

BOILERS
 Vertical—Sizes 5 to 50 H. P.
 1—150 H. P. Horizontal Return Tubular.
 1—100 H. P. Portable.

AIR COMPORESSORS
 1—Straight-Line Ingersoll, 1500 ft.
 1—Straight-Line Blaisdell, 300 ft.
 1—Straight-Line Franklin, 100 ft.
 1—Duplex Laidlaw-Dun-Gordon, 350 ft.
 1—10x10 Chicago-Pneumatic Improved Type N. S. B. Belt-Driven, 218 ft.
 2—Mounted Gasoline-Driven, 100 ft.

HOISTING ENGINES With Boilers
 1—10 x12 D. C. 3 D. Lidgerwood.
 1—8½x13 D. C. 3 D. Mundy.
 1—10 x12 D. C. 8 D. Flory.
 1—9 x10 D. C. D. D. Lidgerwood.
 1—8½x10 D. C. Crook Cableway.
 1—8½x10 D. C. Lambert Cableway.
 1—8½x10 D. C. D. D. Lidgerwood.
 1—8½x10 D. C. Flory Tail Rope Haulage.
 1—8½x10 D. C. D. D. Mead-Morrison.
 1—7 x10 D. C. D. D. Carlin.
 1—7 x10 D. C. D. D. Lidgerwood.
 1—7 x10 D. C. D. D. Orr & Sembower.
 1—6½x10 D. C. D. D. National.
 1—6x13 S. C. S. D.
 1—No. 28 D. D. Revers. Novo Gasoline.
 1—Otis Electric Elevator Hoist.

HOISTING ENGINES With Boilers
 1—9 x16 D. C. D. D. Mundy.
 1—7 x10 D. C. D. D. Monaghan, with slewing attachment.
 1—6½x12 D. C. D. D. Mundy.
 1—5½x8 D. C. D. D. American.
 1—7½x10 D. C. D. D. Mundy.
 2—7½x10 D. C. D. D. Contractor's Plant.

LOCOMOTIVES
 30" Gauge, Saddle-tank.
 Several 12, 14, 15 and 18-ton.

CARS
 25-42" Gauge Low Vain Mine Cars.
 8-36" Gauge 1½-yard "V" Shape.
 1-36" Gauge 2-yard "V" Shape.
 10-Standard Gauge 6-yard K. & J.
 4-30" Gauge 4 cu. ft. Koppel.

STACKS
 2-30"x50' Long ¼" material. NEW.
 1-20"x25' Long 3-16" material. NEW.
 1-38"x40' Long.

EVERYTHING FOR THE CONTRACTOR.
 Ask for Our List. Prompt Shipments.
Pittsburgh Machinery & Equipment Co.
 Fulton Building, Pittsburgh, Pa.

FOR SALE

1—500 H. P. B. & W. Water-Tube Boiler, 150 lbs. pressure; 2 sets Attica Chain Grates, etc., complete.
 3—72x18" H. T. Butt-Strap Boilers.
 1—7x10 D. C. D. D. Byers Hoisting Engine, with Boiler.
 1—No. 9 Thew Steam Shovel.
 2—No. A1 Thew Steam Shovels.
 1—125' Chicago Steam-Driven Air Compressor.
 1—38" Gauge 9x14 Porter Locomotive.
 300' 24" Gauge 16-lb. Koppel Track.
 1—Sunbury Stone Unloader.
 1—50 H. P. D. Cyl. Fairbanks-Morse Gas Engine.
 1—5 K. W. 250-volt D. C. Westinghouse Generator.

E. E. McCARTNEY

769 Wilson Avenue Youngstown, Ohio

FOR SALE

TYPE "B"

ERIE SHOVEL

Traction.

Practically Good as New.

Southern States Equipment Co.
NEW ORLEANS

FOR SALE

1½ CU. YD. DIPPER
FULL CIRCLE SWING

STEAM SHOVEL

THEW, TYPE 1

On Traction Wheels. Working Weight, 30 Tons.
Perfect Working Order. Immediate Delivery.

E. C. SHERWOOD

50 CHURCH STREET

NEW YORK

HOISTING ENGINES

1—Lidgerwood, 14x18, D. C., three tandem drum, suitable for cableway.
 1—Shannon, 7½x10, D. C., D. D., with boiler.
 1—Mundy, 6½x10, D. C., D. D., skeleton.
 2—Mundy, 6½x10, D. C., D. D., with boilers.
 1—National, 5½x10, D. C., D. D., with boiler.
 1—Mundy, 8x12, double cylinder, three tandem drums, butt strapped, triple riveted, boiler, independent Mead Morrison 4½x6 swinging engine, equally as good as new.

STATIONARY ENGINE

1—350 H. P. Green Slide Valve Engine, equally as good as new, size 22"x48" wheels 16"x32".

BOILERS

3—American-built, Scotch type marine boilers, 12'6" dia. by 20' long, double end, three corrugated furnaces each end, 100 lbs. steam.
 1—350 H. P., horizontal return tubular Boiler, 125 lbs. steam.

ANCHORS

10—New mushroom Anchors, 5000 lbs. each.

PIPE

6000 ft., strictly first-class 6" wrought-steel Pipe, equally as good as new.
 700 ft. strictly first-class 20" dia. steel-riveted flange Pipe, lengths 20' each.
 400 ft., 24" dia., 30' lengths, equally as good as new.

STEAM SHOVELS

1—65-ton Bucyrus, 2½-yd. dipper, standard gauge.
 1—No. 1 Thew Traction Steam Shovel, ¾-yd. dipper.

CENTRIFUGAL PUMPS

1—Morris No. 12, 14" suction, 12" discharge, direct connected to horizontal engine, 18x10, 4500 gallons capacity per minute.
 34—Standard gauge car trucks, four wheel; wheels 34" dia., in first-class second-hand condition.

RAILS

We have a large tonnage of all weight rails from 20 to 100 lb. relayers; pass any inspection.

Henry A. Hitner's Sons Co.

Station K.

Philadelphia, Pa.

REPAIRED CONTRACTORS' EQUIPMENT

Locomotive Crane

7½-ton Industrial, 4-wheel, 30' boom, bucket operating.

Steam Shovels

70-C Bucyrus, 2½-yard dipper, shop number 1712.

Model 60 Marion, 2½-yard dipper, shop number 1999.

Model 35-B Bucyrus, shop number 1837, full revolving, caterpillar traction, 1¼ and 1½-yard dippers.

Model 28 Marion, 5/8-yard dipper, shop number 2804.

Locomotives

- 1—50-ton, 6-wheel Switcher, standard gauge.
- 4—18-ton, 4-wheel, 10x16" Dinkeys, 36" gauge.
- 2—15-ton, 4-wheel, 9x14" Dinkeys, 36" gauge.
- 2—10-ton, 4-wheel, 7x12" Dinkeys, 36" gauge.

Cars

- 20—12-yard Western Air Dump, standard gauge.
- 100—4-yard Western Steel Beam, 36" gauge.
- 75—4-yard Western Wood Beam, 36" gauge.
- 13—4-yard Oliver Wood Beam, 36" gauge.
- 1—Western Spreader, hand operated, 36" gauge.
- 1—Western Spreader, hand operated, standard gauge.

Hoists, Derricks, Boilers, Concrete Mixers, Etc.

We have a large stock of thoroughly repaired construction equipment of all kinds ready for immediate shipment.

H. KLEINHANS COMPANY

UNION ARCADE

PITTSBURGH, PA.

Special Attention!

Locomotive Cranes, Cars, Steam Shovels, Locomotives, Etc.

FOR PRACTICALLY IMMEDIATE SHIPMENT

- 1—40-ton, 8-WHEEL INDUSTRIAL WORKS LOCOMOTIVE CRANE. Equipped with 50-ft. Boom, etc. This is a splendid large capacity Locomotive Crane, used so very little it is hardly worth mentioning. Just like new. IMMEDIATE SHIPMENT.
- 1—25-ton, 8-WHEEL INDUSTRIAL WORKS LOCOMOTIVE CRANE. Equipped with 50-ft. Boom, etc. This is a very popular type Crane, ACTUALLY USED LESS THAN 60 DAYS, and absolutely just like new. IMMEDIATE SHIPMENT.
- 1—15, 20-ton, 8-WHEEL BROWN HOIST LOCOMOTIVE CRANE. Equipped with 50-ft. Radius Boom, etc. This is also a well-known make and type of Crane, used very little in actual service. Finest kind condition. PROMPT SHIPMENT right out of our Chicago works.
- 1—15-ton, 4-WHEEL BROWNING LOCOMOTIVE CRANE. Equipped with 40-ft. Radius Boom, etc. This Crane little used and coming out of our Chicago shops in A-1 condition for PROMPT SHIPMENT.
- 1—10-ton, 4-WHEEL INDUSTRIAL WORKS LOCOMOTIVE CRANE. Equipped with 40-ft. Radius Boom, etc. Very fine machine, coming right out of the shops. PROMPT SHIPMENT.
- Several CLAM SHELL BUCKETS, various capacities from one-half cubic yard to two cubic yards—Hayward, Browning, Brown Hoist and McMyler manufacture. Some of these Clam Shell Buckets have been actually used less than thirty days. Absolutely good as new. IMMEDIATE SHIPMENTS.
- 1—70 C, BUCYRUS STEAM SHOVEL, strictly modern machine, with extra long Boom, 38 ft. in length, and extra long Dipper Arm, 56 ft. in length, ESPECIALLY ADAPTED FOR COAL STRIPPING. Mounted on Standard-Gauge, 8-Wheel Railroad Trucks; 2 cubic-yd. Dipper, etc. This STEAM SHOVEL has been used so little it is hardly worth mentioning. Absolutely just like new. All ready for IMMEDIATE shipment and service.
- 15—80,000 capacity, 36-ft. GONDOLA RAILROAD CARS, M. C. B. and I. C. C. equipment, coming right out of our works. PROMPT SHIPMENTS. These cars are especially desirable purchases.
- 2—STANDARD GAUGE COMBINATION PASSENGER AND BAGGAGE COACHES. For PROMPT SHIPMENT right out of our Chicago works.
- 1—10-ton, 15x24, Standard-Gauge, Four-Driver BALDWIN SADDLE-TANK SWITCHING LOCOMOTIVE, for PROMPT delivery right out of our shops. This very fine Locomotive, PROMPT shipment.

ALSO CONSIDERABLE OTHER EQUIPMENT. ALL QUOTATIONS SUBJECT TO PRIOR SALES.
PLEASE TELEGRAPH, TELEPHONE OR WRITE US YOUR REQUIREMENTS.

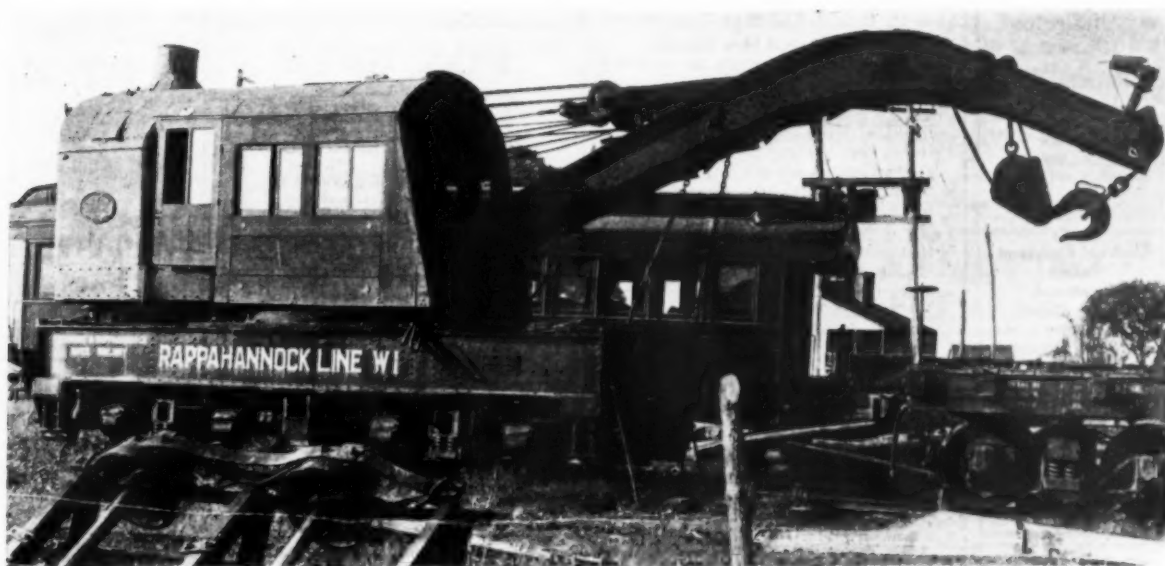
A. C. TORBERT

Locomotive Cranes, Cars, Locomotives, Steam Shovels, Etc.

Continental and Commercial Bank Building

CHICAGO, ILLINOIS

SHOPS AND STORAGE YARDS AT CHICAGO



50-Ton M. C. B. Industrial Wrecking Crane, With Goose Neck Boom.
Immediate Shipment.

LOCOMOTIVE AND CRANE FOR SALE

15 ton 4 wheel 35 ft. boom McMyler single line Locomotive Crane.

Model 28 Marion $\frac{5}{8}$ yd. Dipper Traction Trucks.

2 12" x 16" 4 wheel Saddle Tank 36" Gauge Locomotives.

1 11" x 16" Vulcan 4 wheel Saddle Tank, Standard Gauge.

1 10" x 16" Porter 4 wheel Saddle Tank, Standard Gauge.

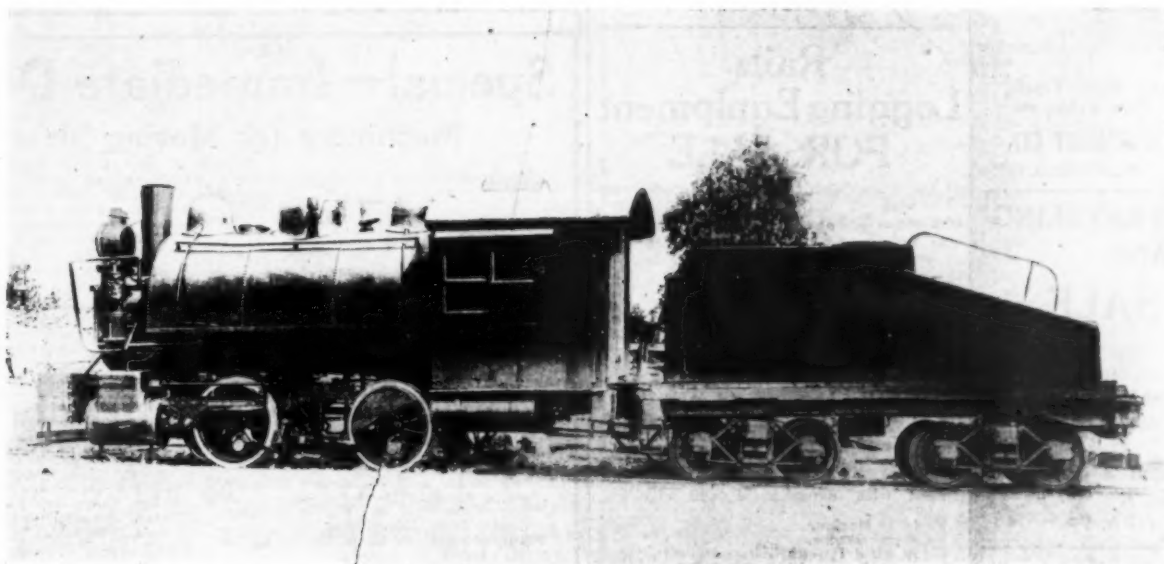
100 tons 40-lb. Relaying Rails with Angle Bars.

All Equipment Offered Our Own Property
PHONE WIRE WRITE

Contractors Machinery & Supply Co.

509 Wabash Building

PITTSBURGH, PA.



American-Schenectady Four-Wheel Saddle Tank
Separate Tender Switching Locomotive.

Get This List

It contains full description, location and price of over 1,000 items.

LIST OF EQUIPMENT FOR SALE

EMPIRE ENGINEERING COMPANY, Inc.
6 CHURCH ST.
NEW YORK

Steam Shovels
Locomotives
Cars
Derricks
Engines
Locomotive Cranes
Pumps
Crushers
Drills
Electrical Equipment
Boilers
Steam and Electric Hoists
Dredges
Traction Engines
Buckets

EMPIRE ENGINEERING COMPANY, Inc.

Contractors—Engineers

6 Church St., New York City

FOR SALE Immediate Delivery

40-ton Flat-Bottom Low-Sided Gondola Cars with steel underframe.
50-ton Steel Hopper Cars.
50-ton Steel Gondola Cars with drop bottoms.
40-ton Wooden Gondola Cars with four drop doors.
12-yard Western Air Dump Cars and 16-yard Western Air Dump Cars.
Switching Engines, Locomotive Cranes and Steam Shovels.

AMERICAN RY. EQUIPMENT CO.
Diamond Bank Bldg. PITTSBURGH, PA.

NEW BOILER TUBES

Immediate Shipment from Stock

100—4" x 14 ft
At Special Price

Other Sizes in Stock

HYDE & COMPANY, Inc. PITTSBURGH

WIRE ROPE

NEW and USED
BOUGHT and SOLD

Your Inquiries Solicited

JOHN F. MEIGHAN
865 Third Ave. NEW YORK CITY

LANE'S LIST

165 H. P. Twin Cylinder Miller Improved Gas Engine.
50 H. P. Foss Gas Engine.
8½x10 Thomas D. C., D. D., Chain Drive, Two-Speed Skeleton Steam Hoist.
¾-yd. Smith Mixer on Skids, steam engine only.
10 H. P. A. C. Motor, 220 Volts.
2800-lb. Drop Hammer and File Cap.
50-ft. Steel, 2-Section Steam Shovel Boom for clam shell work.

Locomotives, Cars, Rail, Track, Crushers, Boilers, Pipe, Cable, etc

T. J. LANE EQUIPMENT CO.

14 BUSHNELL BLDG. SPRINGFIELD, OHIO

ELECTRIC TRAVELING CRANE

FOR SALE

1—Alfred Box 4-motor, 25-ton Crane with 5-ton auxiliary Hoist, 52' span, 220 volt, D. C., in good working order, delivery sixty days.

Henry A. Hitner's Sons Co.

Station K
PHILADELPHIA, PA.

FOR SALE

DRAGLINE

1—All-Steel Monaghan Steam DRAGLINE, Skid and Roller, 65-ft. BOOM, 2½-yd. Bucket. Immediate delivery. Good condition. Now in operation. Price \$10,000.

HORTON CONSTRUCTION CO.
DALLAS, TEXAS

Immediate Shipment

Hoists

Electric, Gasoline and Steam; all sizes.
6 H. P. Novo Gasoline Handy Hoist.
4 to 15 H. P. Novo Kerosene, sing. and D. D.
16 H. P. D. C. D. D. Byers Steam.
6x8 S. C. S. D., with Boller.
5 and 7½ H. P. Revers. Brick Hoist, electric.

Concrete and Hot Mixers

1-Bag Batch Milwaukee Steam, power loader.
¾-yd. Milwaukee, belt drive.
No. 131 Smith 1½-yd. cap. Batch Hopper, like new, with steam or electric power.
2-Bag Batch Koehring Steam Paver.
2-Bag Batch Marsh-Capron Steam Paver.
2—Hot-Paving Mixers.

Motors and Oil Engines

90 K. W., G. E., 3-P., 60-C., 480-V. Generator.
Exciter, Switchboard, etc., \$350.
35 H. P., I. H. C. Tittian Oil Engine, \$750.
3 to 15 H. P. New Novo Kerosene Engines.
32 H. P. Heer Kerosene, 2-cycle, on trucks.

For Road and Quarry

Sullivan Class VW-61 Duplex Channeller.
Thew ¾-yd. Steam Shovel.
5-ton Kelly Tandem Roller, \$1100.
10-ton 3-wheel Huber Steam, scarifier attached, \$1750.
Kinney Road-Oil Gasoline Pump.
No. 3 Climax Crusher, 10x22½ Elevator, etc., \$750.
11x26 Ft. Wayne Crusher, \$500.
10x16 Standard Balanced Steel Rolls, \$500.
8—¾-yd. Troy Trailers, each, \$75.

Dragline Excavator

No. 1 Monaghan 1-yd. Dragline.

Miscellaneous

Oshkosh and Novo Saw Rigs.
Emerson, Jr., 4-in. Discharge Steam Pump.
Concrete Tower Buckets, Hoppers, Chutes.
Bottom-Dump and Tip-Over Buckets.
525 ft. 1½ Wire Rope, \$100.
2—No. 35 2½-ton Brownhoist Hand Winches.
Schlueter Electric Floor Surfer.

ROY C. WHAYNE SUPPLY CO.

Louisville

Kentucky

LOCOMOTIVES

1—Rodgers Standard Gauge Saddle-Tank Locomotive, with 16x22" cylinders, 8-ft. wheel base; weight, 40 tons; working order of boiler, 150 lbs. anywhere. M. C. B. equipment, direct from shops.
1—Porter Locomotive, 4-wheel, saddle tank, 36" gauge, 10x16" cylinders; weight, 20 tons; 140 lbs. steam pressure.
1—Porter Locomotive, 4-wheeled saddle tank, 36" gauge, 9x14" cylinders; weight, 14 tons; 140 lbs. steam pressure.
1—Koppel Locomotive, 24" gauge, 8-ton.
1—Shay-Geared Locomotive, 24" ga., 13-ton.

CARS

20—Western 4-yd. 36" gauge Dump Cars; steel frames and bottoms.
10—Western 12-yd. Standard-Ga. Dump Cars.
1—Oliver Spreader, standard gauge.
40—Koppel Steel Cars, 1½-yd., 24" gauge.

SHOVELS

1—Marion Model 60, 2½-yd. dipper.
1—Bucyrus 70 C., 38-ft. boom, 54-ft. dipper stick.
1—Bucyrus 18 B Traction, ¾-yd. dipper, also 40-ft. steel boom and ¾-yd. clam-shell bucket. Makes a fine crane.
1—Marion Model 28, ¾-yd. traction, shop number above 3200.
1—Thew Type O, ¾-yd., shop number above 350.

MISCELLANEOUS

1—2-yd. Marion Dipper Dredge, hull 90' x 28' x 7'.
Electric-Light Plant; 16'x40' Sectional House Boat; all in first-class condition.
1—Austin Steam-Power Trench Machine, type "O."
6 miles Koppel Track, 24" gauge.

LEONARD F. SMITH
LA PORTE, IND.

Rails Logging Equipment FOR SALE

20 Log Cars, standard gauge, splendid condition.
One 40-ton Rod Locomotive, standard gauge.
One Lidgerwood Loader and Skidder combined, standard gauge.
2500 tons 60-lb. Relays, with bars.
Write or wire for prices.

United American Iron & Steel Co.
750 Woolworth Bldg.

Steam Shovels

1 Model 70 Bucyrus.
1 Model 60 Marion.
1 No. 6 Thew.
1 Erie, with extra boom and clamshell bucket.
1 Model 28 Marion.
1 Keystone Grader.
1 10-ton Steel Derrick, complete, with 8½x10 D. C. D. D. Lidgerwood Engine and Boller.
1 10x20 Acme Crusher, with elevator and screen.
1 ½-yd. Smith-Chicago Concrete Mixer, with engine and boiler on wheels.
A large quantity of small equipment and tools.

RALPH R. LEWIS CO.

538 Commercial Trust Co. Philadelphia, Pa.

FIRST—Get Bulletin 250—or, wire ZELNICKER IN ST. LOUIS

Before buying or selling

RAILS

LOCOMOTIVES—CARS—TANKS
MACHINERY, PILING, ETC.
What have you for sale?

FOR SALE

1—20 Ton 4-Motor P. & H Crane, 34' span.

IMMEDIATE DELIVERY

SCULLY-JONES & COMPANY

Railway Exchange Bldg. Chicago, Ill

Huber Road Roller

1—10-ton Road Roller, complete with extra front steering wheels for traction work. Splendid condition, exceptional bargain.

Marsh-Bothe Machinery Co.

SALES ENGINEERS

975-80 Old Colony Bldg. Chicago, Ill.

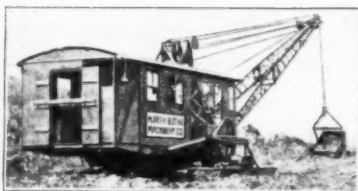
Locomotive Crane

FOR SALE

1—39' boom McMyler Electric Locomotive Crane with 1½-yard Bucket.
NATIONAL PRODUCTS CO.
East Liverpool, O.

For Sale—Price Right to Quick Buyer

1—Model 60 Marion Steam Shovel, Kentucky delivery.
1—Model 20 Marion Steam Shovel, Virginia delivery.
1—Model 61 Marion Steam Shovel, Virginia delivery.
2—10x16 Vulcan Locomotives, Kentucky delivery.
1—5x14 Vulcan Locomotive, Virginia delivery.
2—6-yard K. & J. and Western Dump Cars, South Carolina delivery.
For further information address
11 14 People's National Bank Bldg.
LYNCHBURG, VA.



MARSH-BOTHE MACHINERY CO.

975-80 Old Colony Bldg.

Chicago, Illinois

Special—Immediate Delivery Machinery for Moving Materials

STANDARD GAUGE LOCOMOTIVES

1 Porter 4-wheel 12 in. x 16 in. Saddle Tank, weighing 25 tons.
1 American 4-wheel 14 in. x 24 in. Saddle Tank, weighing 35 tons.
2 American Moguls, 18 in. x 24 in., square tender, weighing 55 tons.

36-INCH GAUGE LOCOMOTIVES

6 Porter 4-wheel 9 in. x 14 in. Saddle Tanks, Contractor's type.
2 Vulcan 4-wheel 9 in. x 14 in. Saddle Tanks, Contractor's type.
2 Vulcan 4-wheel 10 in. x 16 in. Saddle Tanks, Contractor's type.
1 Baldwin Consolidation 15 in. x 20 in., square tender, weighing 38 tons.
1 American Forney 10 in. x 16 in., weighing 25 tons, 2-4 type.

HOISTING ENGINES (STEAM)

1 Flory 10 in. x 12 in., double cylinder, single drum, without boiler.
1 Flory 9 in. x 10 in., double cylinder, double drum, with boiler.
2 Stroudsburg 8½ x 10 in., D. C. D. D., with boiler.
1 Flory 10 in. x 12 in., D. C. D. D., with boiler.

We also have several air compressors, air pumps, tanks, rock crushers, etc. We rent a large portion of this equipment at reasonable rates.

HOISTING MACHINERY COMPANY
50 Church Street
NEW YORK CITY

STOP -- LOOK

Send Us List of Equipment You Want to Sell

We BUY, SELL and RENT

Everything the Contractor or Needs. Ask for List

Pittsburgh Machinery Equipment Co.

Fulton Bldg. PITTSBURGH, PA.



Immediate delivery this ton three truck Heisler, splendid condition, built 1912, located in West Virginia.

Two fifty ton Shays built 1909 and 1913, splendid condition, West Virginia delivery.

Three truck 70 ton Climax, splendid condition, local Atlanta.

Wire us for particulars

Have other rod and gear type locomotives located Atlanta which have been thoroughly rebuilt in our shop.

SOUTHERN IRON & EQUIPMENT COMPANY
ATLANTA, GEORGIA

DRAGLINE

1—No 1 Walker "T" Monaghan Dragline. Kerosene or Gasoline. Shop number 273. Practically new. All-steel 40' boom 1-yard Page bucket.

PRICE - \$3500.00

We own, offer and guarantee the dragline to be in perfect condition and for immediate delivery.

MARSH-BOTHE MACHINERY CO.

975-80 Old Colony Bldg.

Chicago, Illinois

RAILS AND ACCESSORIES
NATIONAL STEEL RAIL CO.
 L. H. COHN, Pres. and Genl. Mgr.
 230-32 Pierce Bldg. ST. LOUIS, MO.

RAILS
 First-class Relaying in 20, 25, 30, 35, 40, 45, 50, 55, 60, 70-lb.; also Frogs, Switches and Spikes.
 The American Metallic Packing Co. LEXINGTON, KY.

The West Va. Rail Co.
 HUNTINGTON, W. VA.
 Manufactures Light Steel Rails
 12, 16, 20, 25, 30, 35, 40, 45 lbs. per yd.
 We are also dealers in Relaying Rails All Sizes.

Relaying Steel Rails
 15-lb., 40-lb., 55-lb., 60-lb., 70-lb., 80-lb., 85-lb., and Angle Bars to lay same, also other weights; and NEW STEEL RAILS, all weights. We handle first-class Relaying rails. We buy Rails fit to relay, and pay top cash.
ROBINSON & ORR, Pittsburgh, Pa.
 Low Prices on New FROGS and SWITCHES.

BLOCKS
 Steel and Wood Tackle Blocks of All Diameters
 For Immediate Shipment
WIRE ROPE, New and Used
ATLANTIC EQUIPMENT CO.
 Singer Building New York

85-lb. A.S.C.E. RELAYERS
 100 tons, with Angle Bars to match. Available immediate shipment and centrally located. We positively own these Rails and offer same in carload lots and over.
 Also less Relayers, sizes 25-lb. to 100-lb., in stock our Pittsburgh yards and vicinity. Immediate shipment guaranteed and prices very attractive.
 Carload and less carload inquiries and orders solicited.
 Rails cut to length for structural purposes. Frogs, Switches, Bolts, Nuts, Spikes and all accessories.
L. B. FOSTER COMPANY
 100 Building PITTSBURGH, PA.

FOR SALE
 Air Compressors, Rock Drills, Small Rails, Cars, Buckets, Air Receivers, Hoists, Pumps, Electric Motors, etc. Can be seen running.
RUNDLE & BEHM
 Reading Penna.

FOR SALE
Immediate Shipment
 Two (2) 15-ton 8-wheel Brownhoist Locomotive Cranes, with 1½-yd. bucket, 30' booms.
 One (1) Type "B" Erie Revolving Steam Shovel, equipped with standard steam-shovel dipper handle and ¾-yd. dipper, also New Locomotive Crane, boom and clamshell.
GENERAL EQUIPMENT CO.
 30 Church Street New York, N. Y.

FOR SALE OR HIRE
First Class Road Building Outfit
 Consisting of: One Keystone Steam Loader and Grader; one 10-ton Gasoline Roller, Grader and Scarifier, etc., all in good condition. Also 12 pairs of good Mules, with Pump Wagons and Harness, and lot of small tools. Now in the South. Address
SHOREWOOD PACKING COMPANY
 Massey Kent Co., Md.

"HOISTS"
 Complete line Rebuilt Steam and Electric Hoisting Engines.
 Also Compressors, Mixers, Dorricks, Cableways, Rollers, Cranes.
 Write for list.
HOISTING ENGINE SALES CO., Inc.
 1036 Grand Central Station New York City

AIR COMPRESSORS AND TANKS
 Steel Derrick Car, Derricks, Dredge Buckets, Engines and Pumps.
A. B. CLARK COMPANY
 225 Fifth Avenue NEW YORK

DUMP CARS

16 Western 2-way, 4-yd.
 36-in. gauge Dump Cars, in unusually good condition. Can be shipped at once from New York State.

HENRY LEVIS & CO.
 COMMERCIAL TRUST BUILDING
 PHILADELPHIA, PA.

RAILS - RAILS - RAILS
 NEW RAILS
 16-20-25-40-70-80
 RELAYERS
 30-35-55-60-65-85
MORRISON & RISMAN
 RAIL DEPT., BUFFALO, N. Y.

Second-Hand and Rebuilt RAILROAD CARS
 BOX, FLATS, STOCK AND TANKS
 Specifications and Prices on Application
HOUSTON RAILWAY CAR CO.
 P. O. Box 556 Houston, Tex.

RAILS
 All sections, new and relaying, for quick shipment. Wire or write for prices.
M. K. FRANK
 Frick Bldg. PITTSBURGH, PA.

Relaying Rails

We have for immediate shipment:
 250 tons of 30-lb. Relaying Rails.
 150 tons of 35-lb. Relaying Rails.
 Complete, with splice bars.
 Atlanta (Ga.) delivery.
 Write or wire for price.

The Isaac Joseph Iron Co.
 525 Reading Road Cincinnati, O.

EQUIPMENT FOR SALE
 1-1½-yd. Lidgerwood-Crawford Excavator.
 1-9x14 Baldwin S. T., 36" gauge.
 2-Marion Steam Shovels, Improved "A," 40-ton.
 1-No. 0 Thew Steam Shovel, Traction.
 1-1-yd. Hayward Class E Clam Shell Bucket.
 1-1-yd. Hayward Class E Orange Peel Bucket.
JOHN M. GREENE
 261 Drexel Bldg. Philadelphia, Pa.

STEAM SHOVELS LOCOMOTIVE CRANES LOCOMOTIVES CARS RAILS HOISTING ENGINES GRAB BUCKETS ETC.

Try us for honest value in dependable "used" material of this character. We'll treat you right.

Wm. B. Grimshaw Co.
 1051 Drexel Bldg. Philadelphia, Pa.
 Dealers in "used" but "not abused" machinery

Locomotive Cranes

1-American, 10-ton, 4-wheel, 50' boom, single line.
 1-Industrial, 10-ton, 4-wheel, 40' boom, double line, 1 yd. Clam Shell.

MOORE BROS.

39 S. La Salle St. Chicago, Ill.

Locomotive, Steam Shovels, Locomotive Cranes, Cars, New and Relaying Rails

WE HAVE FOR SALE

40 Standard and 36" gauge modern direct-connected Locomotives in all types and weights from 8 to 75 tons.
 10 Standard and 36" gauge geared Locomotives, all weights.
 15 Steam Shovels and Locomotive Cranes of different types and sizes.
 3000 tons Relaying Rails, all sizes, on our Birmingham yards.
 100 sets 35 and 40-lb. Frogs and Switches, good as new.

Birmingham Rail & Locomotive Co. Birmingham, Ala.

RELAYING RAILS

I HAVE AT HAGAN, GEORGIA (50 miles from Savannah on the Seaboard Air Line) TWELVE HUNDRED TONS FORTY-POUND RELAYERS AND IN MY WAREHOUSE HERE ONE HUNDRED TONS GOOD RELAY SPIKES, ½x4 and ½.

If interested, write or wire.

LOUIS H. METZGER
 First National Bank Building Mobile, Alabama

For Sale
2 Shay Locomotives

L. G. EVERIST, Inc.
 SIOUX CITY, IOWA

RELAYING RAILS

For Immediate Shipment
16-25-30-40-45-56-70
 Wire or Write Us for Prices
HUNTINGTON MATERIALS COMPANY
 Huntington, West Virginia

FOR SALE
Rails, Tanks, Locomotives, Etc.

One 10,000-gal., 60-ft. Tower Tank; tower built for 20,000 gals., located point of Mississippi. Can be shipped at once.
 One Heisler Locomotive, 20-ton.
 One Heisler Locomotive, 23-ton.
 One Clyde Log Loader, for prompt delivery.
 5 miles of 35-lb. Rail, 1 mile 56-lb. Rail, 2 miles 45-lb. Rail.
 250 tons No. 16 and 20-lb. Rail; located point of West Virginia.
 1000 tons of 56 and 60-lb. Rail.

WRITE OR WIRE

WANTED—RAILS, KEGS, Etc.

1000 tons 12 to 70-lb. Rails.
 500 kegs of 5½x9-16 Track Spikes, new or second-hand.

WRITE OR WIRE

U. S. RAIL & EQUIPMENT CO.
 840-44 Bank of Commerce & Trust Co Bldg. Memphis, Tenn.

Flat Cars, Locomotives, Box Cars, Caboose Cars, Passenger Equipment, Etc.

200—FLAT CARS, entirely new bodies, 8-sills, rebuilt trucks, 60,000-lbs. capacity; any lengths; prompt shipments.

200—FLAT CARS, entirely new bodies, 8-sills, rebuilt trucks, 50,000-lbs. capacity; any lengths; prompt shipments.

10—FLAT CARS, 60,000-lbs. capacity, 40 ft. long, built new by us two years ago; 8-sills, steel body bolsters, all-metal trucks; best of condition; repaired and repainted; ready for shipment.

10—BOX CARS, 50,000-lbs. capacity, 36 and 38 ft. long inside; good condition, metal trucks, body bolsters and draft gear; quick shipments.

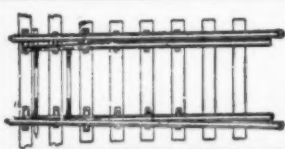
4—CABOOSE CARS, standard type, bodies entirely new, trucks rebuilt, complete with all inside equipment; ready for shipment.

LOCOMOTIVES—ALL TYPES, 10 to 150 tons—REBUILT.

PASSENGER COACHES—ALL TYPES—REBUILT.

WIRE WRITE COME TO SEE US

Georgia Car & Locomotive Company
 ATLANTA, GEORGIA



SWITCHES, FROGS, CROSSINGS

Portable and Industrial Track

THE CINCINNATI FROG & SWITCH COMPANY

Switch Stands CINCINNATI, OHIO Rail Braces (4)

FROGS SWITCHES CROSSINGS STANDS

THE CENTRAL FROG & SWITCH CO.

MANUFACTURERS

CINCINNATI OHIO

Track Equipment of Every Description

E. H. WILSON & COMPANY

COMMERCIAL TRUST BUILDING

PHILADELPHIA

IRON AND STEEL AND

RAILWAY EQUIPMENT

THE WEIR FROG CO.

Manufacturers of

Frogs, Switches, Crossings Rail Braces, etc.

CINCINNATI, O.

Manufacturers of Balkwill Articulated Cast Manganese Crossings

NEW STEEL RAILS, STEEL TIES

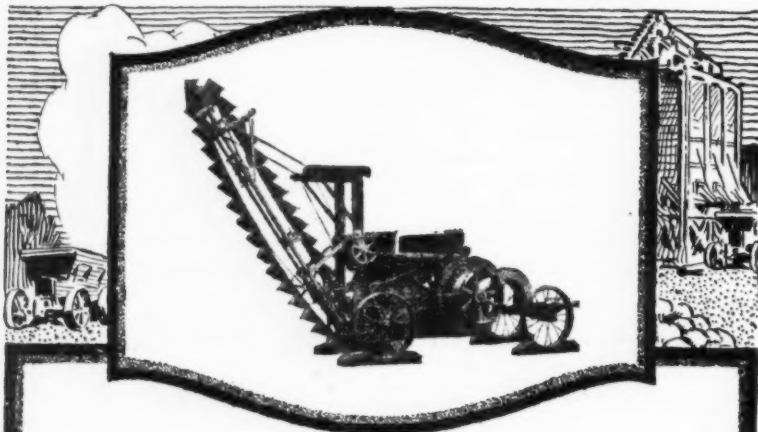
12 lbs. to 60 lbs. per yard

Concrete Bars, Rounds, Squares, and Twisted Squares
Light Steel Angles

SWEET'S STEEL COMPANY

Mill and General Offices, WILLIAMSPORT, PA.

THE AMERICAN FROG AND SWITCH CO., Hamilton, Ohio
FROGS, SWITCHES, SWITCH STANDS, RAIL BRACES



Large Capacity at Small Expense with Aurora Rock Crushers

Aurora Cast Steel Rock Crushers give dependable service under the severest operating conditions.

Maximum capacity at minimum expense is the direct result of simplicity, strength, efficiency and durability. Having an all-steel frame and fitted with manganese steel crushing jaws when required, this crusher handles hardest rocks with best results.

Crushing power is compounded by the moving jaw not only having a backward and forward movement, but oscillating at the same time.

Low jaw opening makes feeding convenient and easy.

Elevators of any practical length are furnished—either folding or non-folding.

Aurora Rock Crushers are made in three sizes, both portable and stationary, with suitable screens and bins.

There is Austin-Western time and labor-saving machinery for every stage of road making and maintenance, whether crushing and handling rock, scarifying, grading, rolling, oiling, sprinkling, sweeping or conveying and hauling materials.

Send for our complete catalog.

THE AUSTIN-WESTERN ROAD MACHINERY CO.
CHICAGO

SOUTHERN IRON & METAL COMPANY

P. O. Box No. 1136 Jacksonville, Florida

New and Relaying Rails
Iron and Steel Scraps
PIPE, New and Second Hand

New and Rebuilt Machinery
Metals of All Kinds
Locomotives



FROGS, SWITCHES, PORTABLE TRACK
TURNABLES INDUSTRIAL CARS CROSSINGS
LIGHT RAILWAY EQUIPMENT CO.
COMMERCIAL TRUST BUILDING PHILADELPHIA PA

LOCOMOTIVES

IMMEDIATE SHIPMENT

STANDARD GAUGE

1—11x16 Baldwin Saddle Tank. 1—14x24 Davenport Saddle Tank.
1—18x24 Baldwin Six-Wheel Switcher. 1—20-ton Shay.
1—18-ton O. & S. Locomotive Crane, 8-wheel, M. C. B., for delivery in 45 days.

THE GEORGE B. CURD COMPANY

Car and Locomotive Shops:
CINCINNATI, O.

Branch Office:
ATLANTA, GA.

HOFFMANN-SPROUL COMPANY

Widener Building, Philadelphia

NEW IRON AND STEEL PRODUCTS

SCRAP AND LEFT-OVERS FROM IRON AND
STEEL MANUFACTURED PRODUCTS

NOW READY FOR IMMEDIATE SHIPMENT

REVOLVING SHOVEL

Model 28 Marion on traction wheels, excellent condition, new in spring of 1917.

LOCOMOTIVES

1—Baldwin, 30-ton, standard gauge, type 0-4-0, saddle tank.
1—60-ton American 6-wheel Switcher; driving wheels 41" diameter; carries 150 lbs. steam; weight all on drivers; excellent condition; just out of shop.
1—60-ton Type 4-6-0 Rhode Island Switcher; Southern delivery; big bargain; carries 150 lbs. steam pressure.

LOCOMOTIVE CRANES

1—"American" Railroad Ditcher. "Twenty Machines in One." Locomotive Crane work, shipbuilding, log loading, steam-shovel work, etc.
1—Browning 10-ton 4-wheel 45-ft. boom, bucket operating drums.

BUCKETS

2—1½-yd. Single Line Clamshell Buckets.
1—¾-yd. capacity Orange Peel Bucket.
1—1¼-yd. Clamshell Bucket.

CABLEWAY ENGINE

1—Flory 10x12 D. C. Double Tandem Drum Engine; drums 40" dia. x 40" face; levers banked in quadrant.

MINE HOISTS

1—8x10 Flory, double drum, double cylinder; drums side by side and keyed to shaft; link motion.
Lambert, 10½x12 double cylinder, single drum, 35-in. dia., 24-in. face; drum grooved; will take up ¾-in. cable; drum flanges 8 in. deep; link motion.

BOILERS

1—Marine Type, 150 H. P. (portable).
1—Marine Type 100 H. P. Freeman Internal Fired Portable Boiler; diameter 41 in.; length over all 18 ft.; 125-lb. pressure.
1—30 H. P. Locomotive Type Portable Boiler and Engine, mounted on iron wheels with engine mounted on top of boiler.

DERRICK HOISTS

1—60 H. P. Puget Sound Heavy-Duty Double-Cylinder Double-Drum Hoist with 60-in. diam. butt-strapped boilers. Good log loader or heavy derrick engine.
1—7x10 American Double-Cylinder Double-Drum, with boiler.
2—Byers 16 H. P. Double Cylinders, double drum, equipped with boilers and swing-ing gears.
2—7x10 Lidgerwood Double Cylinder, double drum, skeleton.
1—9x10 Lidgerwood, double cylinder, double drum with special boiler, all steel gears, engine built for heavy duty.

AIR COMPRESSOR

1—Sullivan Straight Line, 2-stage, Class W B-2, capacity 1160 ft., 100 lbs. pressure, speed 110 R. P. M.

CONCRETE MIXERS

1—Standard 10 cu. ft., gasoline driven, mounted on trucks, complete, with loading platform.
1—No. 4 Smith with steam engine on skids.
1—Lot Concrete Spouting, size 1½ in. wide, 9½ in. deep; hopper connections.

CARS

12—Flat Cars, 50,000-lb. capacity, M. C. B., Journals 4x7.
4—1-yd. capacity "V"-shaped Steel Two-Way Dump, 30-in. gauge.

F. MAYER

1601 Monadnock Bldg.

CHICAGO, ILL.

Southern Shops Seeking Contract Work

Castings, Stampings, Forgings, Machine Work, Metal Specialties

IN ADDITION TO HANDLING LOCAL JOBS OF THIS KIND, THESE FIRMS ARE OPEN FOR SPECIAL ORDERS FOR OUTSIDE CONTRACT WORK

Bosworth-Ard Machine & Foundry Co.
ANNISTON, ALA.

Grey Iron Castings and Machine Work

GEARS A SPECIALTY

Foundry Capacity 75,000 Pounds Daily

CASTINGS

Machine Work, Ship Parts, Bending Slabs
Gear Cutting, can be furnished
without delay

DROP US A LINE

AMERICAN-BLAKESLEE MFG. CO.
BIRMINGHAM, ALA.

MILL AND BUILDING CASTINGS

Structural Steel
Machinery of All Kinds

The Mecklenburg Iron Works

M. I. W.

Charlotte, N. C.

M. I. W.

STRUCTURAL AND ORNAMENTAL IRON GRAY IRON CASTINGS

FROM 1 TO 10,000 POUNDS

Write for Estimates

ROANOKE IRON & BRIDGE WORKS, Inc. Roanoke, Va

WE MAKE A SPECIALTY OF

High Grade Grey Iron and Semi-Steel Castings

Also All Kinds of Machine Work. Special Machines Made to Order. Prices Will Suit You. Prompt Service.

Salem Foundry & Machine Works

Salem, Va.

ELECTRIC STEEL CASTINGS

From 1 to 500 lbs.

Soft Steel and Alloy Steel Castings

Warren Steel Casting Co., St. Louis, Mo.

GRAY IRON and Semi-Steel Castings MACHINE WORK

Raleigh Iron Works Company, Trustees,

RALEIGH, N. C.

GRAY IRON CASTINGS

From 1 to 1000 Pounds

Machine Tool Castings a Specialty

SOUTHERN FOUNDRY CO.
OWENSBORO, KY.

MACHINE WORK

We are well equipped to do machine work. Lathes 14" to 24", planer, shaper, boring mill. Convenient foundry. Complete machines or parts. Send blueprints for estimates.

KENTUCKY ELECTRICAL CO.
OWENSBORO, KY.



CASTINGS

Gray Iron and Semi-Steel

Well-Equipped

Foundry and Machine Shop

Established 72 Years

JANNEY & CO.
MONTGOMERY, ALA.

Owing to the curtailment of clay working plants we are in position to take contracts for other than clay working machinery.

J. C. Steele & Sons

STATESVILLE, N. C.

IF YOU WANT

To get in touch with some Extra Contract Work

ADVERTISE IN THE

Southern Shops Seeking Contract Work Department

Rates on Application

MANUFACTURERS RECORD

BALTIMORE, MD.

SPECIALTIES

In connection with our general engineering business, we operate a JOB SHOP, employing high-grade mechanics, and having the advantage of skilled engineering advice.

We thus take contract work; particularly the designing and construction of specialties and other work requiring engineering knowledge as well as accurate workmanship. Write us your needs.

A. M. Lockett & Co., Ltd.

Contracting Mechanical Engineers

New Orleans Houston, Tex.

Machine and Foundry Contract Work

WANTED

Thoroughly equipped with modern machine shops and foundry, and can render prompt and efficient service.

Also build machinery and carry a full line of mill supplies.

STRATTON & BRAGG CO.
PETERSBURG, VA.

Grey Iron Castings Machinery

Structural and Ornamental Castings up to 5 tons

PATTERNS OF ALL KINDS

CHATTANOOGA ROOFING & FOUNDRY CO.

CHATTANOOGA, TENN.

Repair Works

Engines, Boilers, Pumps, Etc. Repaired

Grate Bars

Your inquiries solicited.

The Strickland Machine Co.
RICHMOND, VA.

GEARS

Making Gears is a specialty with us. We have the equipment and can give you the service.

Columbus Truck & Supply Mfg. Co.

COLUMBUS GEORGIA

Cape Fear Machine Works
INCORPORATED

GREY IRON CASTINGS

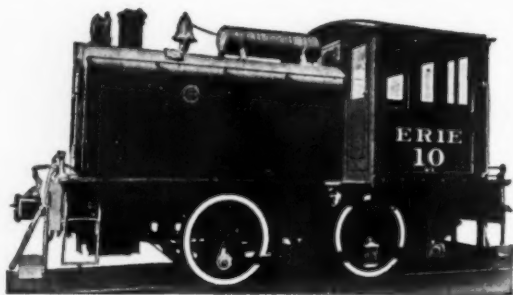
Mill—Railroad—Steamboat Work

Founders—Boiler Makers

Machinists

Railroad and Wharf Facilities

Wilmington, North Carolina



GASOLINE LOCOMOTIVES

are suitable for contractors' service, and for light switching in and about lumber mills, quarries, brick yards, clay pits, plantations, etc. They are self-contained, clean, simple to operate, and consume no fuel while standing idle.

Baldwin Gasoline Locomotives are built in four sizes, weighing, respectively, $3\frac{1}{2}$, 5, 7 and 9 tons, for either narrow or standard gauge; and there is also a 23-ton size of standard gauge, illustrated above, which is suitable for switching service in manufacturing plants and railroad yards. Many years' experience in building Baldwin steam locomotives has proved invaluable in developing a reliable and economical gasoline locomotive.

Record No. 85 is of interest in this connection.

The Baldwin Locomotive Works PHILADELPHIA, PA., U. S. A.

Cable Address, "BALDWIN PHILADELPHIA"

Represented by

F. W. Weston, 120 Broadway, New York, N. Y.	George F. Jones, 407 Travelers Building, Richmond, Va.
C. H. Peterson, 627 Railway Exchange, Chicago, Ill.	A. J. Beuter, 312 Northwestern Bank Bldg., Portland, Ore.
A. S. Goble, 1210 Boatmen's Bank Bldg., St. Louis, Mo.	Williams, Dimond & Co., 310 Sansome St., San Francisco, Cal.

B. & B. Wire Rope

On the every-day job B. & B. Wire Rope has in reserve a great store of strength and stamina. It's in the emergency that the true worth of B. & B. Wire Rope is evident.

This *extra* service and *extra* dependability makes B. & B. Wire Rope the most economical rope you can buy.

Ask for Catalog No. 85.

BRODERICK & BASCOM ROPE COMPANY ST. LOUIS, MO.

Manufacturers of celebrated Yellow Strand and all standard grades of Wire Rope.

Branches: New York and Seattle. Factories: St. Louis and Seattle.



Thor

Piston Air Drills equipped with Corliss Valves, Roller Bearings, Telescopic Screw Feed and one-piece Connecting Rods; Long Stroke Riveting Hammers made from one solid piece—can't come loose; Chipping Hammers with a single valve of the latest design.—Electric drills.

INDEPENDENT PNEUMATIC TOOL COMPANY

Chicago New York Pittsburgh Birmingham San Francisco Detroit Montreal

Time Saving tools
High in efficiency
On the job constantly
Ready for delivery

THE BAY CITY WALKING LAND DREDGE

Suitable for all kinds of ditching, drainage, irrigating and large tile trenches.

Ask for Catalog and Detail Information

BAY CITY DREDGE WORKS

Bay City, Michigan

To keep in touch with Southern Development, read the Manufacturers Record.



Steam and Electric CAPSTANS

Winding Engines
Dock Hoists
Pile Driving Engines
Boom Swingers
Lighterage Engines
Dredge Engines
Spud Engines
Derrick Hoists

We build hoists for every requirement.

Mines, Quarries, Contractors, Etc. Dredging Machinery, Cableways

Get our quotations on your requirements
before placing order.

S. FLORY MFG. CO., Bangor, Pa.



You will do **OSGOOD**
BETTER WITH AN
STEAM SHOVELS - CRANES - DREDGES - ETC.
Write Us Your Requirements
THE OSGOOD CO., Marion, Ohio

The "Bility" family endorses "K & J" Tools—
"K & J" Tools stand for all the things we stand for."
(Signed) Relia Bility—Works Bility—
Dependa Bility—Dura Bility—Profita Bility
The KILBOURNE & JACOBS MFG. CO., General Office, Columbus, O.; New York Office,
25 Broad St.; London Office, Broad Street House, New Broad St., London, E. C.



Porter Locomotives—Light and Heavy

Steam Locomotives—3 to 100 tons—Narrow and Wide Gauges.
Other Specialties—Fireless Stored Steam Locomotives.
Two-Stage Compact Economy Compressed Air Locomotives.



Two-Stage Air, to go in mine cage.

New Steam Locomotives on hand for immediate or quick delivery, latest designs, 24, 36 and 56½-inch gauges.

TWELFTH EDITION Steam Catalogue, 152 pages, 8½x11, engineering data not elsewhere in print, free to intending purchaser, \$1.00 to others.

H. K. PORTER CO., 1211 Union Bldg., PITTSBURGH, PA.

BECAUSE—



DYNAMITE

Will Do Your Work Right

is the reason you should use it. We have a variety of grades—they will suit your particular needs, no matter in what manner they are connected with blasting.

Many users have individual blasting problems to solve. To such we offer our consultation services, and we will also make an exhaustive study of your requirements gratis. Then our recommendation of proper grades is at your disposal—whether you take advantage of it or not.

Could you ask for more?

Aetna Explosives Company

INCORPORATED

120 Broadway

NEW YORK, N. Y.

**GOOD
PRINTING**

THE character of your printed matter makes an indelible impression—good or bad—upon those who see it. More people gauge your standing—the character and quality of product—your up-to-dateness—by that than by any other one thing. Therefore, the need for the right kind of printing.

Our hobby is good printing—not fancy, fussy printing—but good printing, with character, quality and finish—the right type, right stock, right illustrations—all blended into a strong, dignified whole—the kind that will make a good impression for you.

Give us a chance on your next job.

Fleet-McGinley Co.

PRINTERS

Baltimore, Maryland



Explosives and Chemicals

Blasting experts at your service in nineteen cities

In order to render service to users of ATLAS Explosives and Chemicals on a par with the high quality of the products themselves, the ATLAS Company maintains offices throughout the country in which there are experienced men who are able to answer your questions and solve your problems.

No matter where you live or what your particular difficulty may be, there is an ATLAS expert near you who will gladly help you. And if need be, our men will go right to the field of your operations to give assistance on the spot.

These expert service men are thoroughly familiar with the entire line of ATLAS Explosives and Chemicals—high and permissible explosives, dynamites, blasting powders, sporting powders, farm powders, nitric and sulphuric acids, mixed acids, sodium nitrite, ammonium nitrate, lacquers, nitre-cake, etc. Also the use of leather cloth.

Our trained men will consider your problem as an individual piece of work and tell you just the right ATLAS product best suited to your needs.

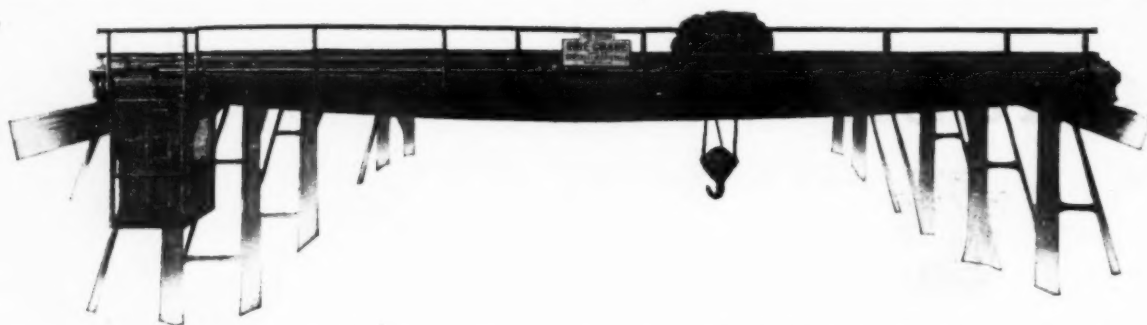
Write for full information.

General users of explosives and chemicals should write at once for further information. Farmers, owners of estates, lumbermen, should get our special book, "Better Farming." Mailed free.

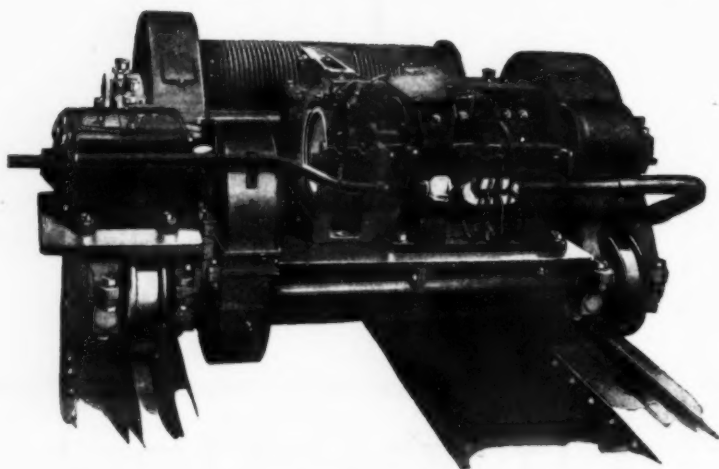
ATLAS POWDER COMPANY

WILMINGTON, DELAWARE

Sales Offices: Allentown (Pa.), Birmingham (Ala.), Boston, Chicago, Des Moines (Ia.), Houghton (Mich.), Joplin (Mo.), Kansas City, Knoxville, McAlester (Okla.), Nashville, New Orleans, New York, Philadelphia, Pittsburg (Kan.), Pittsburgh (Pa.), Pottsville (Pa.), St. Louis, Washington (D. C.), Wilkes-Barre (Pa.).



We Make Quick Deliveries of
ERIE CRANES



A FEW FEATURES:

All Steel Gears
 All Bronze Bushings
 No Overhung Gears
 All Gears Enclosed

Erie Steel Construction Co.
 ERIE, PENNA.

SPARE YOUR FUEL SUPPLY

*By Operating Condensing at
 the Highest Possible Vacuum*

The installation of an Ingersoll-Rand Condensing Plant might mean the difference between capacity operation and shut-down, due to fuel shortage—at any rate, the money-saving in fuel cost is well worth while.

Twenty to 25 per cent of this year's coal saved by providing a condenser for your present non-condensing Corliss engine would carry the plant an extra three months. For a 1000 horse-power engine, operating 300 ten-hour days at 75 per cent. average load, the fuel-saving would be 650 tons. At \$3.50 per ton this represents \$2300.00.

Are you now operating condensing—satisfied with 22-inch vacuum? By installing an efficient condenser and maintaining a 26-inch vacuum you would save 120 tons of coal, or \$420.00 the first year—a handsome profit on the investment.

High vacuum at turbine exhaust? An Ingersoll-Rand Condensing Plant will better 28 inches (referred to 30-inch barometer) and maintain the vacuum with exceptional stability under varying load conditions.

**INGERSOLL-RAND CONDENSING PLANTS
 BEYER COUNTER-CURRENT BAROMETRIC CONDENSERS
 INGERSOLL-RAND DRY VACUUM PUMP
 CAMERON CIRCULATING WATER AND HOT WELL PUMPS**

Highly efficient equipment that will maintain any desired vacuum with absolute reliability and satisfactorily meet any service conditions. Operating costs are low—less water is required than any other types, auxiliaries are economical of power and require little attention.

Entire safety of prime mover and vacuum pump is assured by the patented features of Beyer Condenser design. It also makes possible continuous plant operation with impure cooling water—no shut-downs needed for cleaning or repair.

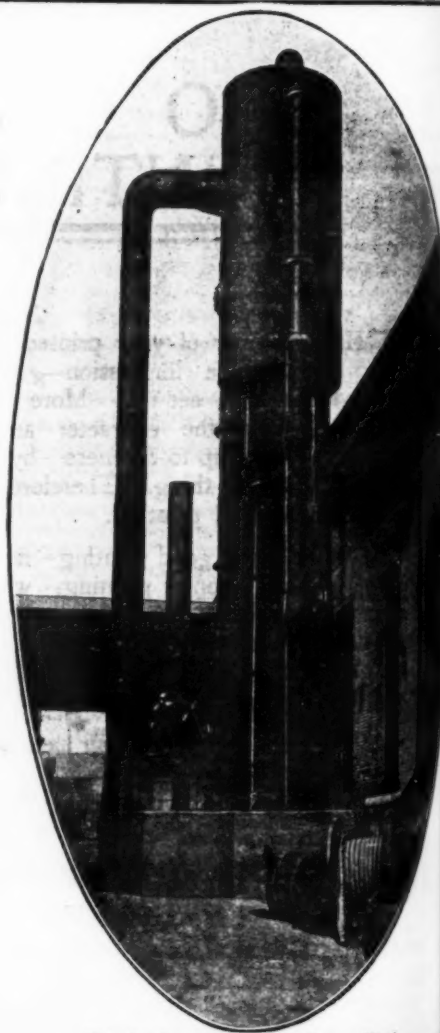
Ask for a copy of Bulletin 9124

INGERSOLL-RAND COMPANY

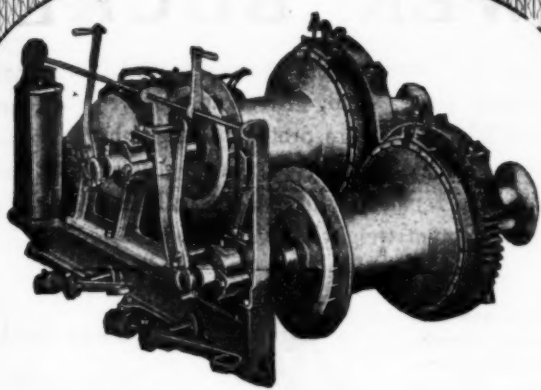
11 Broadway, New York

Offices the World Over

165 Q. Victoria St., London



This Condenser Serves the Power Plant
 of the New York Shipbuilding Corp'n.



The foremost need of today SPEED LIDGERWOOD HOISTS

Steam — Electric — Gasoline

Built in standard lines to cover every hoisting need in contracting, marine, mine and industrial work.

All combine speed in operation with durability in design and construction, insuring continuous service.

CABLEWAYS - DERRICKS - LOG SKIDDERS

LIDGERWOOD MFG. CO.

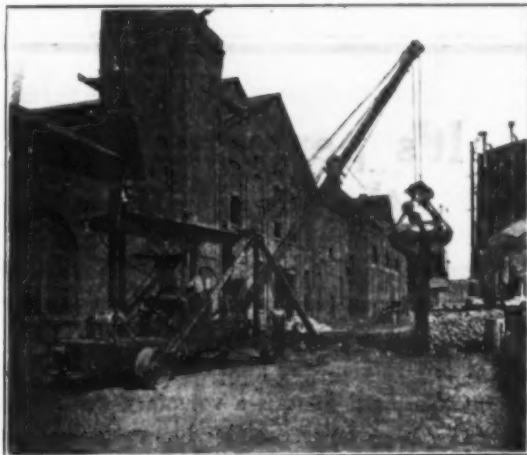
96 Liberty St., New York

Philadelphia, Pittsburg, Chicago, Los Angeles, Seattle
Woodward, Wight & Co., Ltd., New Orleans,

7712

Performance of the BYERS AUTO-CRANE

Is not limited to one single class of operations. Clam-shell or orange-peel work, as well as hook, skip magnet, pile-driving, etc., can all be successfully accomplished, getting maximum of efficiency in every instance.



There is an Auto-Crane for your work, too. Investigate.

Built in one size, but choice of three kinds of power and three kinds of mounting.

THE JOHN F. BYERS MACHINE CO.
240 Sycamore St. Ravenna, Ohio

STROUDSBURG = QUALITY

We Standardized the 125 Lbs. Pressure Hoisting Engine

Like Putting Money in the Bank



Buying a Stroudsburg Hoisting Engine is a "Gilt Edge" investment. It will earn you greater profits and help you to finish the job on time. Breakdowns are rare with the Stroudsburg. If from constant use some part should wear out, our duplicate part system enables you to make the engine "ready for running" with very little delay. This is important.

Write for Catalogue No. 9 and full details.

**"BUILT FOR THE MAN THAT
WANTS THE BEST"**

Built for every purpose

The
Up-to-Date
Contractor's
Favorite

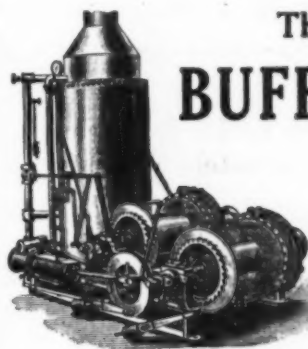
**STROUDSBURG ENGINE
WORKS**

Office and Works: No. 64 N. 3rd St.
STROUDSBURG, PA.



GUARANTEE

The Advantages of BUFFALO HOISTS



are set forth clearly and briefly in a special folder which should interest contractors and other hoist users. Ask for one. 25 years of satisfactory service are behind them, insuring a successful future.

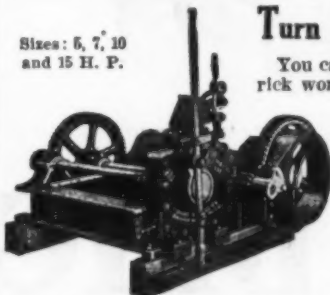
Let us tell you all about them.

BUFFALO CONTRACTORS PLANT CORP., Buffalo, N. Y.

Turn Waste Minutes Into Money

Sizes: 5, 7, 10
and 15 H. P.

You can save time, labor and fuel on your derrick work by installing



DAKE Swinging Gears

One lever starts, stops and reverses it, and when the throttle is closed the brake is automatically applied to the drum.

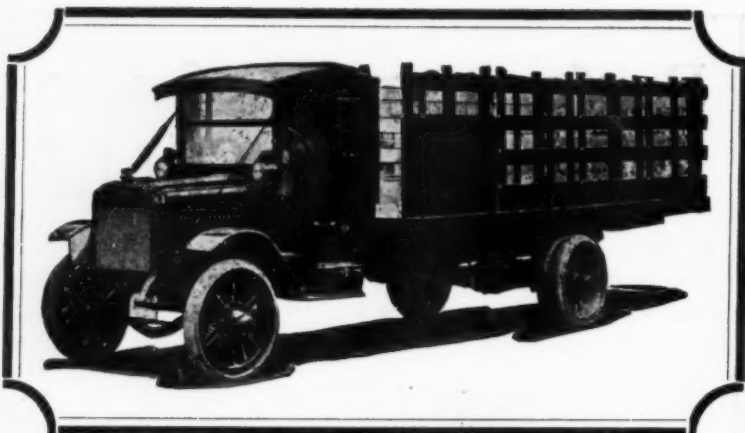
The boom is always under perfect control, and the load may be quickly and accurately spotted.

Swinging the boom without the use of the main hoisting engine saves fuel.

Send for catalog and full particulars.

DAKE ENGINE COMPANY
GRAND HAVEN, MICH.

Agents—New York: H. L. Drullard, 80 Church St. Chicago: J. E. Chisholm, Railway Exchange Bldg. St. Louis: Wm. C. Johnson & Sons Machinery Co. San Francisco: Harron, Rickard & McCone.



It's performance that counts

Republic Trucks have earned their reputation and their tremendous demand solely on the basis of performance. Whenever a Republic Truck is bought for work in any kind of hauling, it is only a short time until there is a voluntary demand for Republics from other business houses in the same community.

The reason for this demand is the dependable service that Republic Trucks always deliver and the reason behind the dependable service is the quality that is built into all Republic Trucks. The fact that Republic builds nothing but trucks and that Republic engineers specialize in producing trucks of ideal hauling efficiency makes possible the highest standard of truck quality.

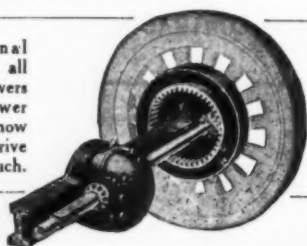
More than 1300 Republic Service Stations distributed all over the United States make dependable service everywhere available.

There's a Republic exactly fitted to the requirements of your business. Seven models: $\frac{3}{4}$ ton to 5 ton.

The Republic dealer will aid you in selecting the model that will prove most profitable in your business. Booklet sent on request.

REPUBLIC MOTOR TRUCK CO., INC.
Alma, Michigan

The Torbensen Internal Gear Drive used in all Republic Trucks delivers 92% of the motor power to the wheels. We know of no other type of drive that delivers as much.



REPUBLIC

Internal Gear Drive MOTOR TRUCKS

Built by the Largest Manufacturers of Motor Trucks in the World

OWEN BUCKETS

Type "C" Owen Buckets are designed for rehandling crushed stone, sand, gravel and other loose gritty materials. Complete protection and lubrication keeps the bearings clean at all times, insuring long service with less repairs. All excess bulk eliminated, giving minimum weight consistent with strength.

Get prices and complete data covering sizes in which you are interested. Write for new catalog today.

The Owen Bucket Co.
430 Rockefeller Bldg.
CLEVELAND, OHIO



ROMELINK BUNKS FOR CONTRACTORS

**Sanitary, Fireproof and
Cheaper than Wooden
Bunks in the long run**

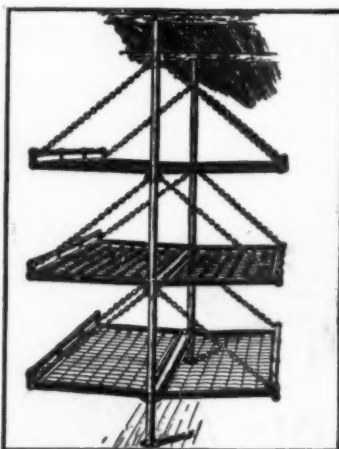


Used by the U. S. Government and many of the largest contractors. Made of the best grade steel and iron. Dust cannot collect. Can be easily carried from job to job.

Romelink Bunks are comfortable—give your men a good night's rest and fit them for the day's work.

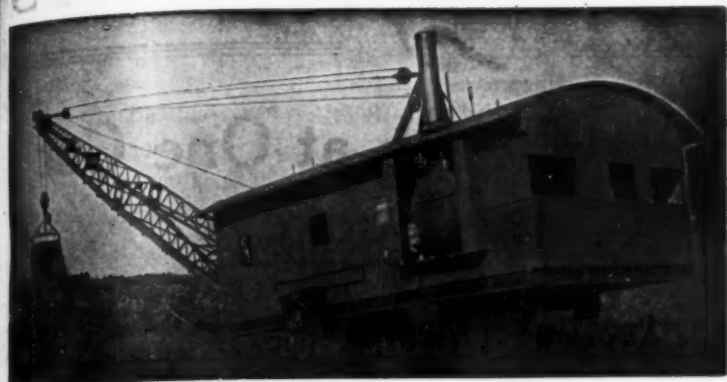
Shipped K. D.

*Write today for
illustrations*



SOUTHERN-ROME COMPANY
Branch of
ROME METALLIC BEDSTEAD CO.
BALTIMORE, MD.

Fast Work in Swampy or Firm Soil Is Accomplished with the Monighan Walking Excavator



On swampy ground the "Walking Traction" of the newest Monighan Drag-Line Excavator does away with the need for planks, skids or track.

Trackmen on the ground around the machine are eliminated entirely. The rapid-traction feature cuts down the required boom length. Let us explain how. A great dirt-mover for Railroad, Levee, Drainage, Irrigation or Big Foundation Excavation.

Write for Catalogue No. 17

Monighan Machine Company

2024 Carroll Avenue, Chicago

No. 3-T Monighan Walking Drag-Line Excavator, equipped with 60-ft. Boom and 3-cu. yd. Page Scraper Bucket, going through a cornfield on its way from station to work near Elsberry, Mo. W. E. Callahan Construction Co., Contractors.

Industrial **CARS** Mine Steel Derricks and Concrete Placing Equipment

Insley Engineering Service is Yours for the Asking

Insley Manufacturing Company

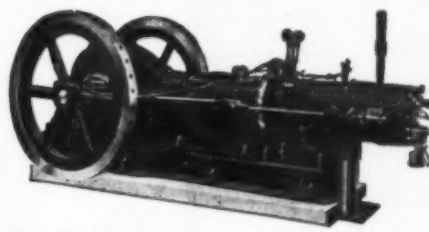
Indianapolis, Indiana

Engineers

Manufacturers

FUEL OIL AIR COMPRESSORS

Will Materially Reduce Compressed Air Costs



Chicago Pneumatic Fuel Oil Driven Simplex Valve Air Compressor will operate on any mineral oil of 280 Beume scale or lighter, containing not over one per cent. sulphur, including Star Oil Diesel, Calol, Stove Oil, Solar Oil, Gas Oil, Kerosene and distillates between Kerosene and Lubricating

Oil. Stationary or portable. Made in capacities up to 600 cu. ft. of free air per minute. Write for Bulletin 34-K.

Chicago Pneumatic Tool Company

1059 Fisher Building,
CHICAGO

Branches Everywhere

52 Vanderbilt Ave.
NEW YORK A-1

Sterling MOTOR TRUCKS

One of the owners of a fleet of Sterling Motor Trucks wrote us to the effect that he had been keeping strict account of the operating and upkeep expense of all makes of trucks, and, more important, their earning power, and he goes on record in stating that "the Sterling operates for less and earns more for the owner than any other Motor Truck on the market."

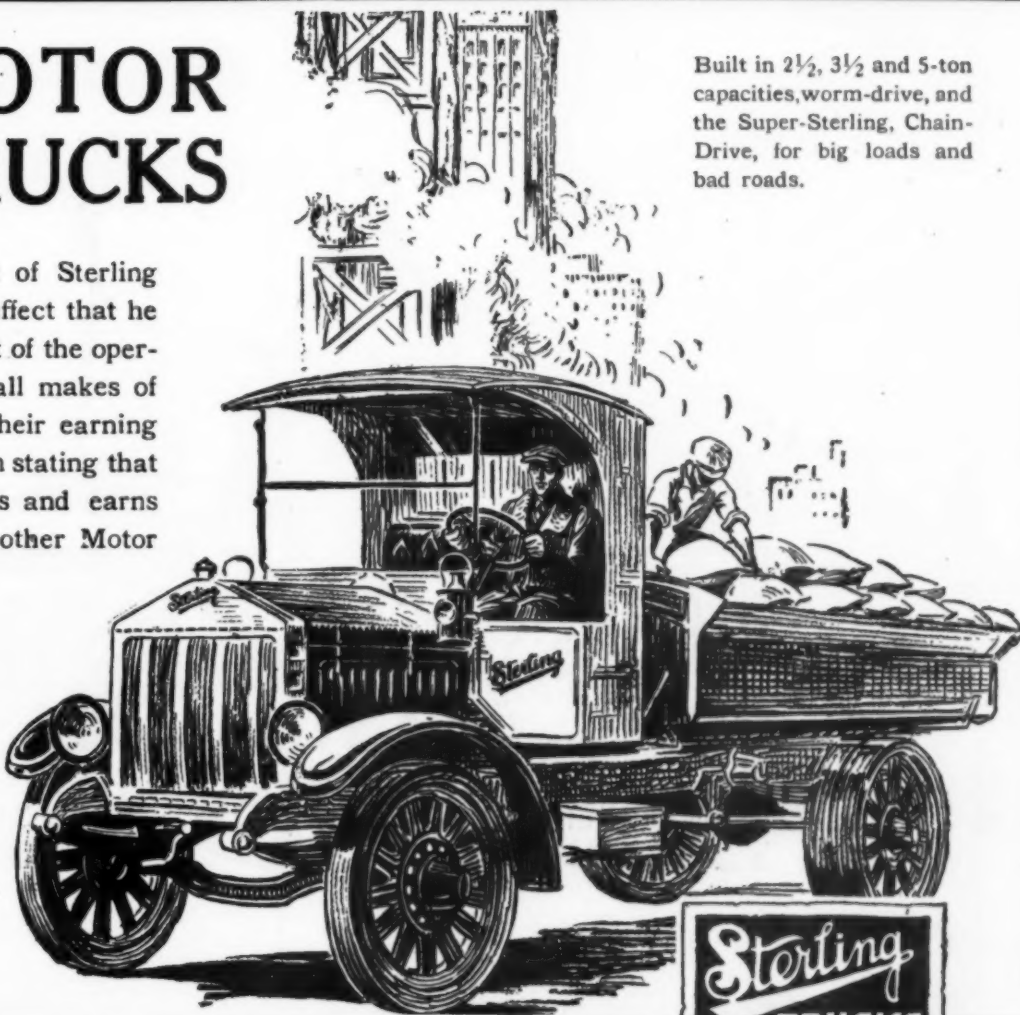
STERLING MOTOR TRUCK COMPANY

MILWAUKEE

WISCONSIN

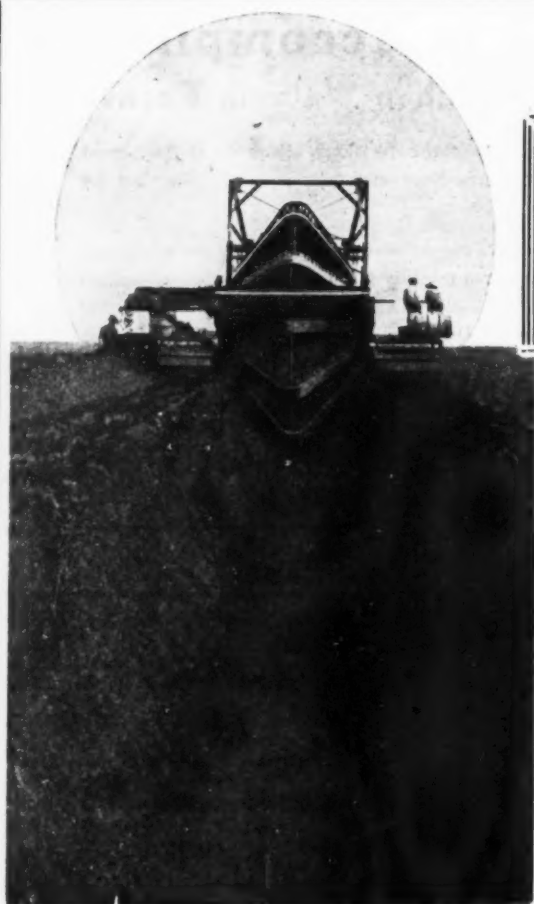
Builders of Motor Trucks
Exclusively for 11 Years

Write for the booklet about Sterling Motor Trucks — "Let's Talk Sterling."



Built in 2½, 3½ and 5-ton capacities, worm-drive, and the Super-Sterling, Chain-Drive, for big loads and bad roads.

Sterling
TRUCKS



Rear View of No. 6 Open Ditcher making
clean-cut, true-to-grade ditch



A Perfect Trench at One Cut With the Buckeye

and leave the ditch clean-cut and true to grade by once passing over the ground. The Buckeye line consists of nine different size Open Ditchers. Especially suitable for wet soil. In successful use today in Florida and Louisiana under the hardest test.

In Louisiana, No. 2 and No. 3 machines excavated and finished $1\frac{1}{4}$ miles of trench per day.

Another 9-foot machine operating in Florida, in one month's time excavated 38,985 cubic yards at 2 $\frac{3}{4}$ cents per cubic yard, allowing for a depreciation of 24%, interest at 6% and all incidental charges, such as extra freight, boat hire, board of the men, etc.

In Louisiana several No. 2 Open Ditchers are working under a wide variety of soil conditions. Their average, extending over a period of several months, is better than one-half a mile of completed ditch daily.

Write for illustrated catalog with full details.

The Buckeye Traction Ditcher Co.
FINDLAY, OHIO



Artists

DESIGNS
ILLUSTRATIONS
RETOUCHING
HOWARD & FAYETTE STS.

ALPHA

PHOTO
ENGRAVING
CO

Engravers

HALF-TONES
LINE ENGRAVINGS
COLOR PLATES
BALTIMORE MD.



Two-yard Sauerman Cableway delivering to Hopper of Commercial Sand and Gravel Handling plant.

Conservation of Labor

has always been an appealing feature of the

Sauerman Dragline Cableway Excavator

Because

Digging, Conveying, Elevating and Dumping

are all accomplished by the one machine operated by one man in one continuous forward operation. Two men at the most are required for the entire care of the operating cableway.

Today labor conservation is of prime necessity due to the necessary demands on the man power of the country.

Just consider the conservation of labor made possible when all intermediate labor between pit and plant is eliminated.

We will be pleased to give you further information and particulars on our cableway excavating machinery. Write us your conditions and requirements and we will advise you.



Cableway Excavators, Power Scrapers and Cableway Accessories

SAUERMAN BROS.

328 S. Dearborn St., CHICAGO, ILL.

Manufacturers of Dragline Cableway
Excavators, Power Scrapers
and Cableway Accessories

HAYWARD BUCKETS

UNLOADING CARS

THE need for speedy unloading of cars, barges, etc., is obvious. The means to accomplish the end most economically should be no less obvious to those who know of Hayward Buckets and their work.

An automatic bucket is the only machine that will unload barges or cars, deliver material to storage, reclaim it as required and convey it to the point at which it is to be used. And Hayward Buckets are the best of automatic buckets.

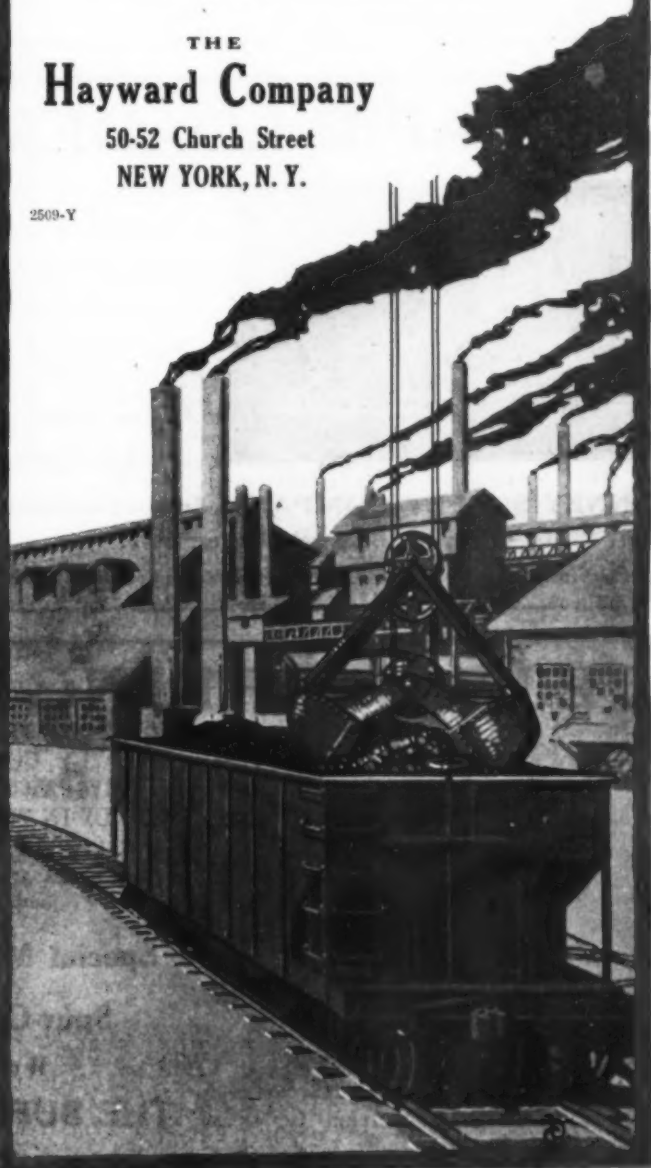
They are available in many sizes and types, including Clam Shell, Orange Peel, Drag Scraper and Electric Motor Buckets.

Catalog 44 has such splendid adaptations of Hayward Buckets to big business that it will pay you to "mull" it over.

THE Hayward Company

50-52 Church Street
NEW YORK, N. Y.

2509-Y



LOW 1918 PRICES

On HIGH SPEED Equipment

HIGH SPEED
BOSS
CONTRACTORS EQUIPMENT



Building Mixers with Automatic Power Loader—Measuring Water Tank

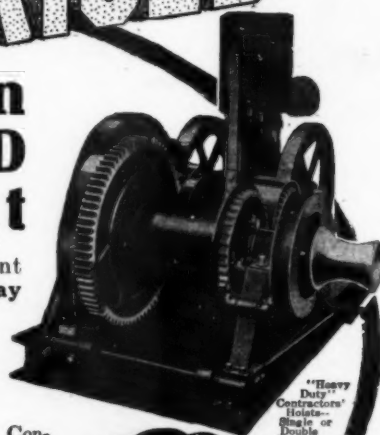
You cannot buy better Equipment for any job you have—why pay more than Boss prices?

"Built of Steel" Equipment sold under "Money Back" Guarantee. Mixers for every purpose—all used sizes—4 to 22 ft. capacities. Hyatt Roller Bearings—all improvements. Hoists, Backfillers, Pumps, Elevators, Concrete Carts, Pavers, Grouters, Etc. Write for new 1918 Catalog—full of Equipment bargains.

The American Cement Machine Co., Inc.
KEOKUK, IOWA

Write nearest office

W. E. Austin Co., Atlanta, Ga.; Smith Courtney Co., Richmond, Va.; Roy C. Wayne Co., Louisville, Ky.; Ole K. Olson, New Orleans, La.
Stock carried at above points—also in all other principal cities.



"Heavy Duty" Contractors' Hoists—Single or Double Drum.



Low Chargers that save time and labor. Guaranteed to mix Mortar and Plaster as well as Concrete.

THE RAPID LOADER



Two parts—150 pounds each.

None Stronger.

None Lighter.

All Steel and Fool-Proof.

Low in Price

Write for Details

BONNEY SUPPLY COMPANY, Incorporated

114 Livingston Bldg., Rochester, N. Y.

14 East Jackson Boulevard CHICAGO Henry H. Meyer Co., BALTIMORE

½c PER YARD FOR POWER

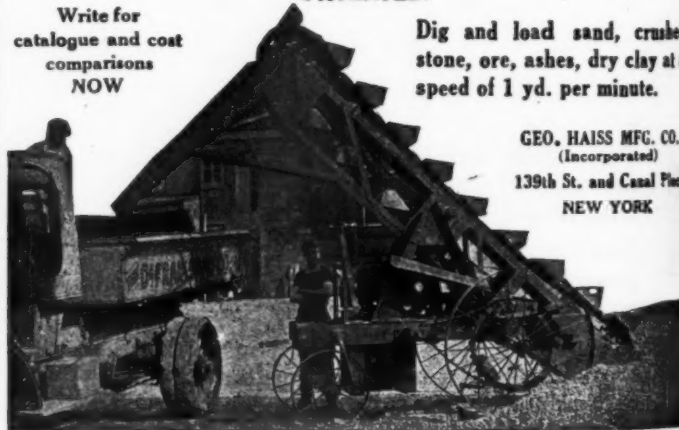
1 CU. YARD PER MINUTE

HAISS DIGGING WAGON LOADER

(PATENTED)

Write for catalogue and cost comparisons NOW

Dig and load sand, crushed stone, ore, ashes, dry clay at a speed of 1 yd. per minute.



GEO. HAISS MFG. CO.
(Incorporated)
139th St. and Canal Pk.
NEW YORK

KELLY-SPRINGFIELD ROLLERS

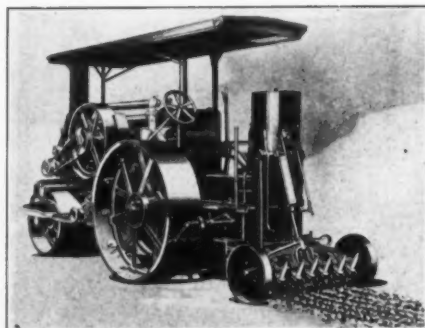
FOR MORE THAN 30 YEARS OUR ROAD AND STREET ROLLERS HAVE BEEN USED BY CONTRACTORS, CITIES, COUNTIES AND GOVERNMENTS IN EVERY PART OF THE WORLD, ESPECIALLY IN THE SOUTHERN STATES.

In Addition to ALL SIZES AND STYLES—¾ TO 20 TONS
Both Steam and Gasoline
WE BUILD

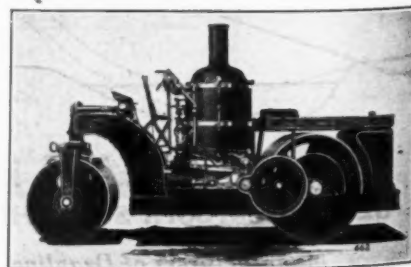
Special Maintenance Rollers

and Spur-Geared Tandems

Write for Catalog

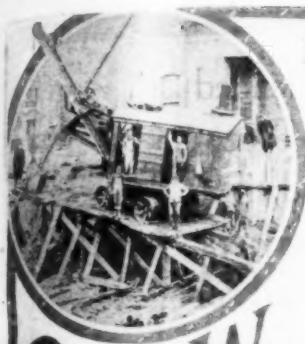


ROLLER WITH SCARIFIER.



TANDEM ROLLER.

THE BUFFALO-SPRINGFIELD ROLLER COMPANY
SPRINGFIELD, OHIO, U. S. A.



Ready Portability

Thew Shovels save time, not only while actually digging, but also in getting on to the job and away from it when completed.

Thews are easily and quickly moved from one job to another. One is illustrated climbing out of a Chicago basement under its own power. As it advanced, it swung the sectional planking from rear to front, forming its own platform.

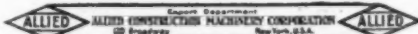
Manufacturers of six sizes—60 combinations of power shovels, built of Thew Standard Machinery Units, equipped with Combination Boom, Shipper Shaft or Horizontal Crowd—Steam, Gasoline, Electric.

"Thews are Everywhere"

The Thew Automatic Shovel Co.

General Sales Office and Factory, Lorain, Ohio

New York Office, 30 Church St



KOEHRING CONCRETE MIXER

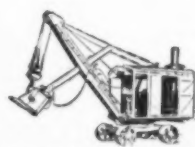


The **HEAVY DUTY MIXER** that is fortified against breakdowns and delays. The *Extra Yardage* Mixer of high-speed, clean-charging loading skip, liberal drum dimensions and fast discharge. Uniform concrete to the last shovelful of every batch.

Write for catalog.

KOEHRING MACHINE CO.

Milwaukee, Wis.



For cellar excavation, street grading, trench digging, quarry work, or any kind of locomotive crane service (with steel boom.)



"Digging sewer trench through hard shale"

When you are using an **ERIE Shovel**, you are ready for any kind of trench excavation.

Big boulders don't hold up an **ERIE**; and it has ample power for digging stiff clay. The above photo shows an **ERIE** digging trench through hard shale.

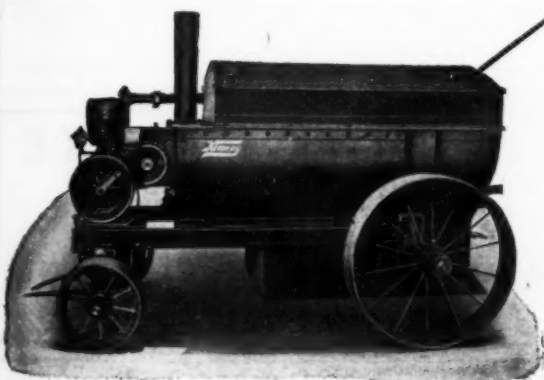
The owners of this **ERIE**, Miller Brothers, of Youngstown, Ohio, wrote us: "We are very well satisfied, and find that the **ERIE** will do a lot more than you claimed it would."

Before you decide on a machine for any kind of excavation work, get all of the facts. We will be glad to send you a bulletin showing just what the **ERIE** can do. Write for our Bulletin R. Address:

BALL ENGINE CO., Erie, Pa.

Builders of **ERIE** Steam-Shovels and Locomotive Cranes; **ERIE** Railway-Ditchers; **BALL** Engines.

ERIE Revolving Shovels



Kinney Handy Heater and Sprayer

Especially designed for the general work of highway construction or maintenance. Two sizes, 300 and 500-gallon tank capacities. The tank and outer shell heavy boiler steel, thoroughly reinforced, all seams welded. The heater may be furnished with kerosene oil burners.

The Kinney line for road builders, contractors and municipalities includes Demountable Equipment for Motor Truck, Oiling Tanks, Combination Auto Heaters and Distributors, Sprayers and other modern equipment for handling and applying bituminous materials.

Kinney Manufacturing Co.

3329-3541 Washington St., BOSTON, MASS.

New York

Philadelphia

Kansas City

Chicago

San Francisco

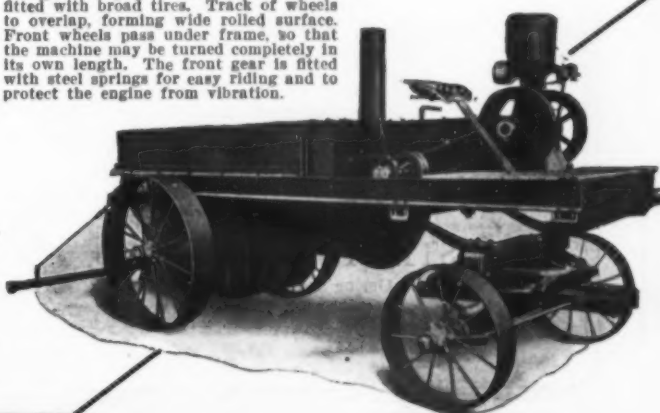


Handy Heaters and Sprayers

The Kinney Handy Heaters and Sprayers will handle any and all kinds of bituminous materials now in use for road and highway treatment. Of especial advantage for handling material which is packed in drums, barrels or other small packages. All parts of the entire outfit, including engines and pumps, are easily accessible for repairs when necessary. The Heaters are of the best material and workmanship and are guaranteed to meet all requirements as represented. For convenience, simplicity, durability and economy **THE KINNEY HANDY HEATERS AND SPRAYERS** have been demonstrated to be the best and most practical combination apparatus for road builders and municipalities.

Engine-Driven Horse-Drawn Type

Tank capacity 400 gallons. Adapted to be drawn by horses, traction engine or steam roller. Furnished with steel wheels of regular height. Front and rear wheels fitted with broad tires. Track of wheels to overlap, forming wide rolled surface. Front wheels pass under frame, so that the machine may be turned completely in its own length. The front gear is fitted with steel springs for easy riding and to protect the engine from vibration.



Northwestern Steel Forms

Recognized as standard, and recommended by leading contractors and engineers everywhere. Saves man-power, money and time in construction of tile, culverts, flumes, sewers, drains, and all such work. Standard or special sizes; round or elliptical. For particulars write for Bulletin 24.

NORTHWESTERN STEEL AND IRON WORKS

(CAPITAL \$200,000)

EAU CLAIRE

WISCONSIN

The Southern Purchasing Company

"An Association for the Advancement of Bituminous Streets and Roads in the South"

Cost Estimates Furnished for All Types Asphalt Streets and Bituminous Roads.

Paving Bonds and Special Assessment Securities Marketed.

Directory of Asphalt Chemists and Consulting Engineers Furnished.

Authorized and Accredited Purchasing Agents for a majority of the principal Asphalt Paving and Bituminous Road Building Contractors in the South.

ALL SERVICE RENDERED IS FREE

For detailed information, address General Offices

James Bldg.

CHATTANOOGA, TENN.



STANOCOLA PAVING ASPHALTS

STANOCOLA PAVING ASPHALTS are pure asphalts, refined from the best Mexican asphaltic petroleum available.

These asphalts are acknowledged by paving experts, experienced engineers and chemists to be able to withstand climatic changes better than any other.

Additional qualities of first importance include:

1. Great ductility.
2. Flexibility.
3. Durability.
4. Ability to withstand disintegrating effects of water.

Furnished in tank cars or wooden barrels.

(Information on request; write for details and tests)

STANDARD OIL CO. of LA.

HOME OFFICE and REFINERY—BATON ROUGE, LA.
SALES DEPARTMENT and MAIN STATIONS—
NEW ORLEANS, LA. and MEMPHIS, TENN.

FRANK A. FURST,
President.

JOSEPH J. HOCK,
Vice-Pres. & Gen'l Mgr.

W. BLADEN LOWMEYER,
Sec. & Treas.

Sand

Building Concrete Paving

Washed Gravel

In Car, Scow and Barge Lots

ARUNDEL SAND AND GRAVEL COMPANY
BALTIMORE, MD.

OFFICE—Pier 2 Pratt St.

WHARVES—Pier 2 Pratt St. and Foot of Fell St.

COOK & LAURIE GRAVEL CO.

Large and Prompt Shippers of

Washed Sand and Graded Gravel

For Concrete, Reinforcing and Roofing Gravel. Railroad Ballast and Road Gravel. Concrete, Brick and Plaster Sand. Special Sand for Sawing Marble.

Office—MONTGOMERY, ALA.

Plant—COOKS, ALA.

CRUSHED GRANITE

GRANITE SAND

JETTY STONE

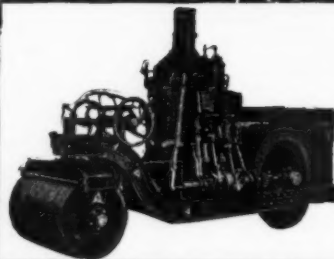
RIP-RAP

RUBBLE STONE

ALL SIZES SHIPPED PROMPTLY

A. T. SMALL QUARRIES COMPANY

OFFICES: 353½ THIRD ST., MACON, GA.
QUARRIES: HOLTON, GA.



GET

"ERIE" ROLLERS

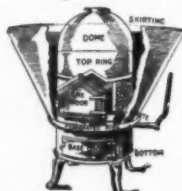
for LONG SERVICE
and BEST RESULTS

ERIE MACHINE SHOPS
ERIE, PENNA.

SAND DRYERS

(With or without External Gratings)

A portable machine, daily capacity 5 to 7 tons.



This dryer has a low first cost, is easily and cheaply operated and guaranteed dry sand.

The low cost makes it valuable for companies needing dry sand on two or more jobs at the same time, thereby eliminating the handling cost of one point only.

Write for descriptive pamphlet.

THE RIPLEY FOUNDRY & MACHINE CO., - Ripk- Ohio

WE ARE THE LARGEST PRODUCERS OF
CRUSHED and BROKEN GRANITE

IN THE SOUTH

THE WESTON & BROOKER CO. Columbia, S. C.



Asphalt Filler

Asphaltic Roadway
Gravel
Roofing Gravel

AMERICAN BALLAST COMPANY

1217-1218 Holston National Bank Building Knoxville, Tennessee

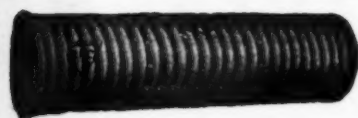
CUMMER ASPHALT PLANTS

All Types and Sizes

THE F. D. CUMMER & SON CO.

CLEVELAND

OHIO



Not Experiment But Experience
dictates the choice of

"ARMCO" (American
Ingot) Iron Culverts

Accept No Substitutes

TENNESSEE METAL CULVERT COMPANY
Nashville Tennessee



The Use of

**"ACME" NESTABLE
CORRUGATED CULVERTS**

Made of

Galvanized Anti-Corrosive NO-CO-RO METAL

**MEANS
CONSERVATION**

—of Shipping Space—"ACMES" shipped Nested
occupy only about one-eighth the space of full circle Culverts,
and box cars may be used.

—of Metal—NO-CO-RO Metal will outlast ordinary steel
usually two and three or more to one.

—of Labor—Since one man can install all smaller sizes and
two men can install any size of "ACME" Culvert, big gangs
with a large percentage of idle time are made unnecessary.

Since "ACMES" last, the labor necessary for frequent repairs
and replacements is also saved.

Write for Catalog M-39.

THE CANTON CULVERT & SILO CO.
MANUFACTURERS
CANTON, OHIO, U.S.A.



TO-DAY

when every railroad in the country
is congested with freight, and cars
are hard to get, a single carload
of "Armco" Iron Corrugated Cul-
verts will give you all the culvert
pipe you need for a good many
miles of road.

LOOK

at the loading of this car! And
yet the weight is not excessive, for
"Armco" Culvert, though strong,
is light. That's another point in
its favor, for labor is scarce and
high-priced. Two men can easily
handle a long length of "Armco,"
thus reducing the cost of installa-
tion to a minimum.

AND REMEMBER, once installed, your culvert troubles are over. Years of service in all kinds of soils have
convincingly demonstrated the enduring qualities of rust-resisting

"ARMCO" IRON CULVERTS

For full information regarding "Armco" Iron
Culverts, Flumes, Road Signs, Sheets, Roofing and
Formed Products, write to nearest manufacturer

"Armco" Iron Culvert & Flume Manufacturers Association
CINCINNATI, OHIO



ESTABLISHED

W. AMES & CO.

-1859-

JERSEY CITY SPIKE AND BOLT WORKS

MANUFACTURERS OF

Spikes, Bolts, Bar Iron, Drift Pins, Nuts, Washers

BLACK AND GALVANIZED

Stock Shipments from N. Y. C. or J. C.

Office and Factory, Jersey City, N. J.

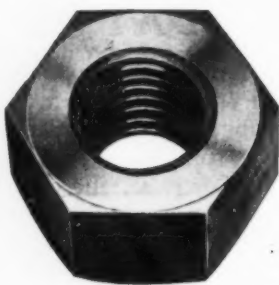


LAKE SIDE FORGE COMPANY
ERIE, PENN.

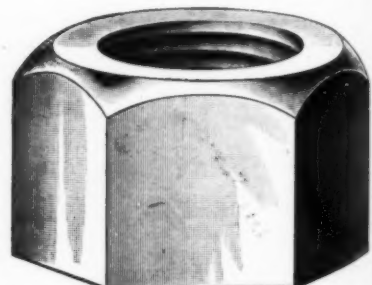
Drop Forgers
Wrench Mfgs.



QUOTATIONS PROMPTLY MADE



EMPIRE

**BOLTS AND NUTS**

Are meeting satisfactorily
exacting requirements

*Our Catalogue May Help You**Write For It***Russell, Burdsall & Ward Bolt & Nut Co.**

PORT CHESTER, NEW YORK

Western Office: Continental & Commercial Bank Building, Chicago, Ill.

Branch Works: Rock Falls, Ill.



MILLED SCREWS



SQ. HEAD
SET

"STANDCO"
Life Saving Hollow Set Screw

DELIVERIES FROM STOCK

SCREW CATALOG
ON
REQUEST



HEX. HEAD
CAP

Manufactured by

STANDARD PRESSED STEEL CO.
PHILADELPHIA

100 %

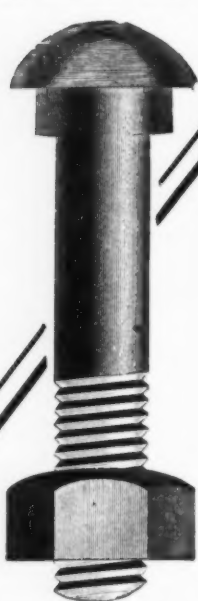
BAR IRON
BOLTS
NUTS
SCREWS

ALSO

GALVANIZING

ST. LOUIS SCREW CO.
ST. LOUIS, MO.

MARYLAND BOLT CO.



MANUFACTURERS
OF

BOLTS

— ALL KINDS —

Machine	Drift
Carriage	Stud
Track	Structural

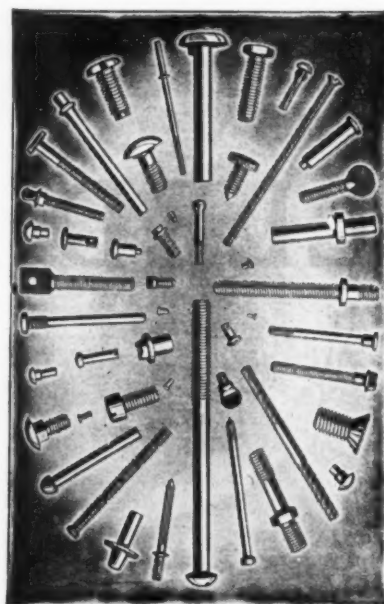
LAG SCREWS, RIVETS AND NUTS

R. C. HOFFMAN & CO., Inc.

General Sales Agents

Office
Continental Building
Baltimore, Md.

Plant
Curtis Bay
Baltimore, Md.



MACHINE SCREWS

Supplied in One Gross
Packages or in Bulk

A Complete Stock at All Times

SPECIALISTS

In the Manufacture of

High-Grade Rivets and Special
Screws of all kinds and from all
grades of material.

If you favor us with one
order we shall expect more.

Do not forget to send sample
or sketch when requesting
prices.

Also state quantities desired.

Catalog for the Asking

THE PROGRESSIVE
MANUFACTURING CO.

TORRINGTON, CONN.

IMMEDIATE SHIPMENT FROM STOCK

Machine Bolts, Lag Screws, Washers, Bolt Ends, Nuts, Turnbuckles,
Rivets, Drills, Taps, Tools, Etc.

WOOD AND MACHINE SCREWS
Brass, Iron or Galvanized

IRON, STEEL AND BRASS SPECIALTIES
Contractors', Railroad and Shipbuilders' Tools and Supplies

My Catalogue is Yours for the Asking

HENRY FRANK, Jr. - - 372-374 Hudson St., New York City

ACID OPEN HEARTH STEEL CASTINGS

Shipping Facilities Unusual. Five Railroads—all New York
Steamship Lines Direct

RIVERSIDE STEEL CASTING CO. NEWARK, N. J.

Malleable Iron Castings

of Highest Quality

Annual Capacity 25,000 Tons.

Castings of all descriptions furnished

Send Blueprints or Samples for Estimates

MISSOURI MALLEABLE IRON CO.
EAST ST. LOUIS, ILL.

ESTABLISHED 1863

SPRINGS OF EVERY DESCRIPTION

HIGH QUALITY OUR SPECIALTY

Cary Spring Works 240-242 W. 29th St.
NEW YORK

NO ORDER TOO LARGE OR SMALL

For 30 Years } HILL } has meant highest
reputation in
Foundry Supplies

Facings, Plumbago, Core Compound, Parting
and Every Foundry Requirement

Write for prices

HILL-BRUNNER FOUNDRY SUPPLY CO.
CINCINNATI, OHIO

Warehouse: Birmingham, Ala.

R. M. HALLOWELL, President
JOSEPH MUTH, Vice-President

E. A. WILSON, 2nd Vice-President

F. W. LISKOW, Secretary
S. I. G. WILSON, Treasurer

Annual Capacity, 200 Million Feet

Paid-Up Capital and Surplus, \$4,300,000

INDUSTRIAL LUMBER COMPANY

Calcasieu Long Leaf Yellow Pine Lumber

RAILROAD AND MINING TIMBERS A SPECIALTY

General Offices—ELIZABETH, CALCASIEU PARISH LOUISIANA

Elizabeth, Calcasieu, Oakdale and Vinton Mills
in Louisiana

Branch Offices: } Chicago, 1520-23 Steger Building
} Wichita, Kansas; Monterey, Mexico

All agreements made contingent upon strikes, fires, accidents or causes beyond our control.

Manufactured according to S. L. M. A. specifications.

TALC

METAL WORKERS' CRAYONS
AIR-FLOATED GROUND TALC
THE DE SOTO TALC CO.
Box Z, CHATSWORTH, GA.

MINERS AND MANUFACTURERS

THE HARFORD TALC CO., Inc.

MINERS AND MANUFACTURERS OF

TALC PRODUCTS

1612 N. PAYSON ST.
BALTIMORE, MD.

TALC FOR PULVERIZING
METAL WORKER and
ROLLING MILL CRAYONS
CUBES BLANKS



Foundry Chaplets

of every description

Forged, Riveted or
Electric Welded

TUMBLING STARS

The Fanner Mfg. Co.

Cleveland, Ohio



Simplex Ore Separating Process MACHINERY

For Graphite and Other Minerals

MANUFACTURED BY

THE W. O. ARZINGER MACHINERY CO.
NASHVILLE, TENN.

A. S. BACON & SONS

LONG AND SHORT LEAF PINE

Rough and Dressed

SAVANNAH, GA.

Wire, Telephone or Write Us Your Needs



ESTABLISHED 1847

"STAR" MILLS

Equipped with ESOPUS STONES

Make the old-fashioned "WATER GROUND TABLE MEAL"

Write for prices and discount

B. F. STARR CO.

Baltimore, Md.

Automatic
Improved
For All Materials.

DRYERS

Economical—Efficient
Great Capacity
American Process Co.
68 William St.
New York.

SINGLE ROLL CRUSHERS

FOR ROCK PHOSPHATE AND LIMESTONE

Capacity, 10 to 200 tons per hour for Coarse and Medium Fine Product

Ore Washers, Jigs, Elevators, Conveyors, Etc.

LET US SEND CATALOG AND PRICES

McLANAHAN-STONE MACHINE CO.

HOLLIDAYSBURG, PA.

Indirect
Heat

ROTARY DRYERS

Especially suitable for drying all kinds of GRANULAR MATERIAL

HERSEY MANUFACTURING CO.,

South Boston, Mass.

DRYERS—CALCINERS

20 Years' Experience Desiccating

Coal, Ores, Clay, Salts, Grain, Cotton Seed
and Similar Materials

has enabled us to develop types suited to any purpose

L. R. CHRISTIE COMPANY

307 Fourth Avenue

PITTSBURGH, PA.



LUFKIN

TAPES
STEEL RULES
WOOD RULES

Styles suited to every kind of work. Each the best of its kind.

On Sale Everywhere

Send for Catalogue

THE LUFKIN RULE CO.

SAGINAW
MICH.

New York
London, Eng.
Windsor, Can.



TO KEEP YOUR TRADE you must use
GOOD springs in your product. POOR
SPRINGS CONDEMN your goods. GET
RELIABLE SPRINGS from

RAYMOND MFG. CO., Ltd., Corry, Pa.

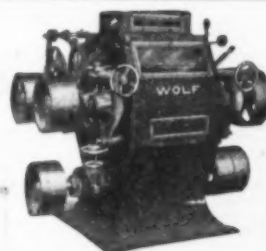
Expert Manufacturers of Many Years' Experience



SEND FOR CATALOGUE NOW

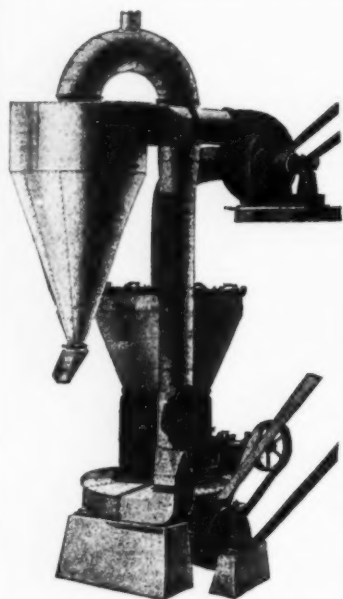
EUROPE SAVED BY AMERICAN MILLERS

The cackling of geese saved Rome.
This nation's Flour, Corn and Cereal
Mills will save the millions of men,
women and children in devastated Eu-
rope. A small investment in a Wolf
Mill will return many fold. Get full
particulars from the Main Office.



THE WOLF COMPANY
Chambersburg, Pa., U. S. A.

"Builders of Complete
Flour, Corn, Cereal and
Feed Mill Machinery."



This Is The RAYMOND High Side Roller Mill

which is now producing a fine uniform Powdered Coal for use on the Open Hearth Furnaces of several of the largest Steel Concerns in the country.

These concerns found that in order to use Powdered Coal on Open Hearth Furnaces it was necessary to grind it to a fineness so that at least 99 per cent. would pass a 100-mesh test sieve, at which fineness they obtained good results, making one ton of steel with 500 pounds of coal on a 50-ton furnace.

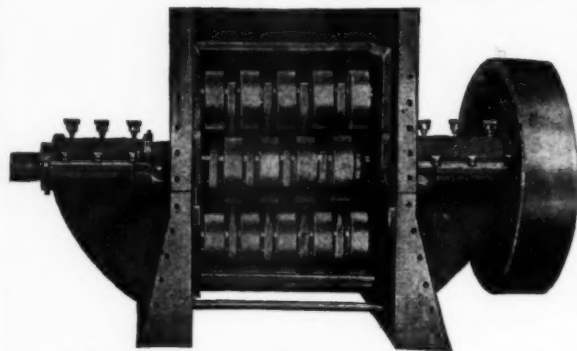
Raymond Mills are now being used for grinding coal for use on Annealing Ovens, Bar and Billet Heating Furnaces, Open Hearth Furnaces and Puddling Furnaces.

A record of our recent installations in steel mills and information regarding the grinding of coal will be gladly sent you.

RAYMOND BROS. IMPACT PULVERIZER CO.
1304 N. Branch Street CHICAGO, ILL.

WESTERN REPRESENTATIVE:
THE DRY MILLING ENGINEERING CO., 204 BOSTON BLDG.,
DENVER, COLO.

The Excelsior Centrifugal Roll Pulverizer



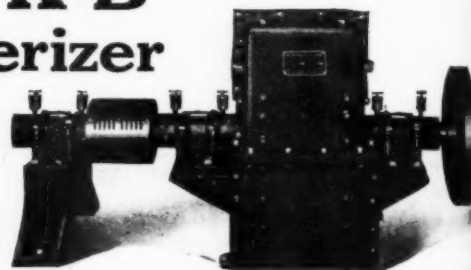
A new low speed machine with high efficiency and minimum up-keep for grinding refractory materials

Write for illustrated circular

Excelsior Tool & Machine Co., East St. Louis, ILL.

The K-B Pulverizer

is
Strong
Safe
Sturdy
and Saves
Power



Crushes 3-inch pieces to dust in one operation.

Send sample of material. We will send figures.

Trade **OK-BQ** Mark
PULVERIZER

Illustrated catalog and references on request.
K-B PULVERIZER CO., Inc.
86 Worth St., New York

The Fuller-Lehigh Pulverizer Mill A Complete Self-Contained Grinding Unit



The Most Economical Mill for Producing

Agricultural Limestone,
Ground Phosphate Rock,
Powdered Coal for Heating
Industrial Furnaces.

Reduces lump material to 20, 40, 60, 80, 100
or 200 mesh without requiring any outside
accessory equipment.

Descriptive Catalogue Upon Request.

FULLER-LEHIGH COMPANY

Successors to Lehigh Car, Wheel & Axle Works

Main Office and Works: Fullerton, Pa., U. S. A.

Branch Offices:

New York, N. Y., 50 Church Street

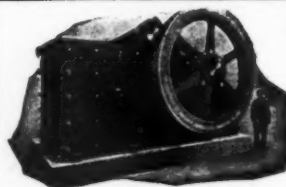
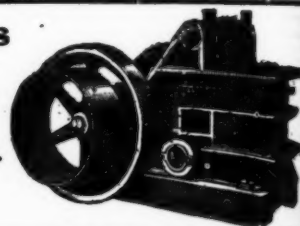
Chicago, Ill. McCormick Building

Reliance Crushers

Are fully described in our
new CATALOG, which we send
FREE

Universal Road Machinery Co.
KINGSTON, N. Y.

H. H. MEYER CO., Baltimore, Md.



Buchanan All-Steel Crusher (Type "C")

For Quarries and Mines—24 Sizes

Receiving capacity 24" x 36" to 60" x 84"

Capacity from 100 to 450 tons per hour.

Crushing Plants complete in all details.

C. G. BUCHANAN CO., Inc. 90 West St. New York, N. Y.

CRUSHERS

For Limestone in Cement, Lime and Agricultural plants; for Gypsum ahead of the Dryers; for Coal, either for coke oven, stoker, chain grates or industrial purposes; for Shale in brickyards; for Bones, either for case-hardening, glue or other purposes; for Shells for poultry feed and roofing purposes, and for many other materials which it is necessary to crush.

GRINDERS

For Limestone, Lime and Gypsum; for Coal ahead for finishing mills; for Clay in brick and terra-cotta plants; for Asphalt, Sand, etc.; for Tankage, Bone and all fertilizer materials; Oilcakes in Linseed and Cottonseed plants; for Nitre, Salt and other chemicals.

20	20-A	20-B	20-C
Limestone	Shale	Tankage	Oil Cake
Lime	Clay	Bone	Linseed
Gypsum	Asphalt	Shells	Cotton Seed
Coal	Sand	Poultry Food	Caster, Nitre
Ochres	All Clay	and all	Salt Cake
Dry Colors	Material	Fertilizer	Soy Bean
		Material	Copra, Etc.

WILLIAMS PATENT



SPECIAL All Drug Material
Soap Powder Paper Stock and all Chemicals

PULVERIZERS

For all soft materials requiring reduction to a fine degree, such as Ochres, Colors, Soap Powder, Coal, Limestone, Lime, Gypsum, etc.

SHREDDERS

For Wood Pulp, Rags, etc., in paper and pulp mills; Bark, Logwood, Dyewood, etc., in tanning, extract and dye plants; Alfalfa, Hay, Herbage and Cereals of all kinds; Licorice Root and all fibrous material.

In short, we manufacture machines for every purpose for which CRUSHING, GRINDING, PULVERIZING AND SHREDDING MACHINERY is used for. To facilitate sending of proper literature we have divided the various materials in seven catalogs. When requesting catalog be sure to specify number as per table.

20-D	20-E	20-F
Stock Food	Coal Crushers	Shredders
Cereals	for	Bark, Chips
Alfalfa	Coke Ovens	Wood Pulp
and all	Gas Plants	Licorice Root
By-Products	and all	and all
from	Industrial	Fibrous
Flour Mills	Plants	Material

THE WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY

PLANT—ST. LOUIS, MO.

1st Nat'l Bank Bldg., DENVER, COLO.

General Sales Dep.—37 W. Van Buren St., CHICAGO

67 Second St., SAN FRANCISCO, CAL.

This is a Traylor Type "A" Jaw Crusher, having one-piece cast semi-steel frame and water rolled bearings.



Traylor Type "A" Jaw Crushers are made in eleven sizes having Jaw openings from 7" x 10" up to 24" x 36".

Stop That Hand Sledging Do the work with a **TRAYLOR JAW CRUSHER**

Traylor Jaw Crushers are built in five types and thirty-six sizes, with either one piece solid cast semi-steel frame, sectional cast semi-steel frame, box section one-piece cast steel frame or sectional cast steel frame.

The sizes start with the little 7" x 10" semi-steel crusher, weighing 8000 lbs., and finish up with the Giant 66" x 86" cast steel crusher, weighing 680,000 lbs. (The biggest jaw crusher in the world.)

Every Traylor Jaw Crusher is fitted with cast steel water-cooled Pitman, and have the main Pitman Shaft Bearings water cooled, your insurance against hot bearings and your assurance of long-lived ones.

Send for Bulletin MR-J-2, it's just off the press and full of valuable data

Traylor Engineering & Manufacturing Company

Main Office and Works: Allentown, Pa., U. S. A.

NEW YORK

CHICAGO

LOS ANGELES

SPOKANE

MORGAN

PRODUCER-GAS MACHINE

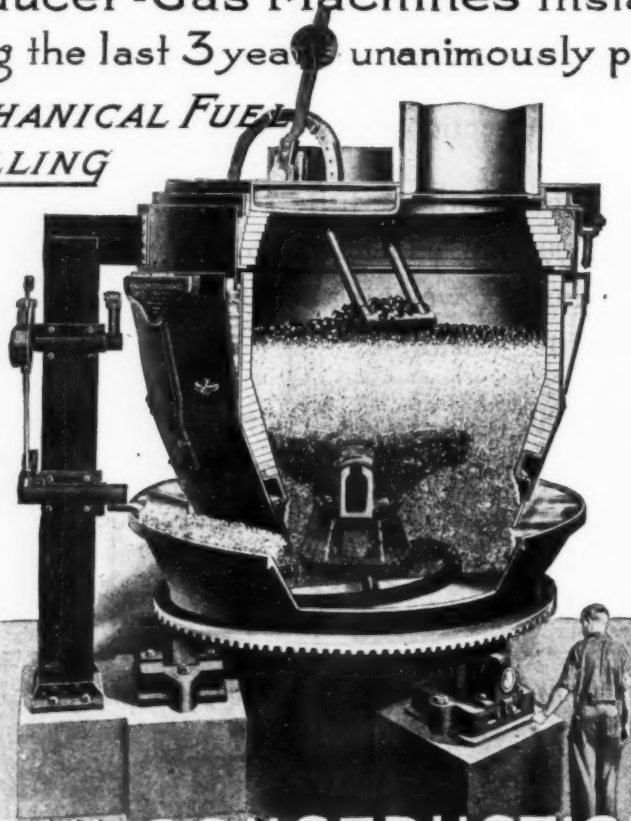


CONTINUOUS LEVELLING

GIVES A RICH AND UNIFORM GAS
FROM EVERY SQUARE FOOT OF
GAS MAKING SURFACE

30 Plants having 265 Morgan
Producer-Gas Machines installed
during the last 3 years unanimously prefer

MECHANICAL FUEL
LEVELLING



MORGAN CONSTRUCTION CO.
WORCESTER, MASS., U.S.A.

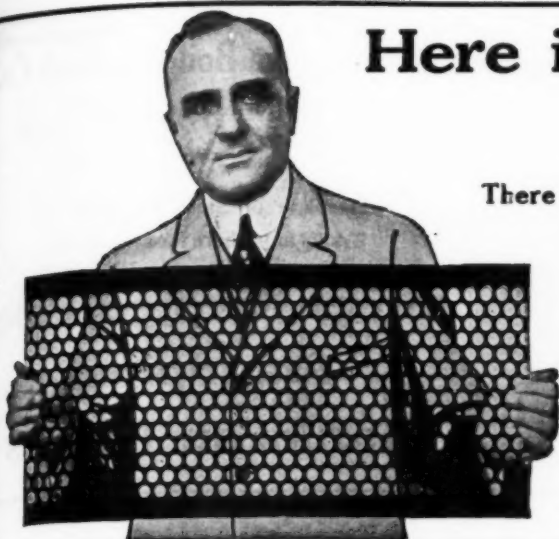
Two m
constru
shaft; u
positive
machine

Econom
belt and
to supp

Econom
less fric

We bui
Automat
daily. C
most su

E
180 S



Here is Perforated Metal with a Reputation

There is quality workmanship in every inch of it

Perforated Steel, Zinc, Copper, Brass, Aluminum

For use in Cotton Seed Oil Mills, Sugar Houses, Rice Mills, Textile Mills, Paper and Pulp Mills, Etc. Sheets and Plates suitably perforated for Irrigation Wells for screening and grading all products including Coal, Ore, Stone, Cement, Clay, Shale, Gravel and Sand

The Harrington & King Perforating Co.

619 N. Union Avenue, Chicago, Ills.

New York Office, 114 Liberty Street

PERFORATED METALS HEADQUARTERS

Cotton Seed Oil Work A Specialty

Send for Samples

ERDLE PERFORATING COMPANY.

Rochester, N. Y.

Carroll Electric Co.
Jobbers of

Electrical and Mill Supplies
Machinery, "Westinghouse"

WE HAVE THE GOODS

Washington, D. C.

Green Fuel Economizer Co.

NEW YORK, N. Y.

Builders of Green Fuel Economizers
and Mechanical Draft Fans

BRICK MACHINERY

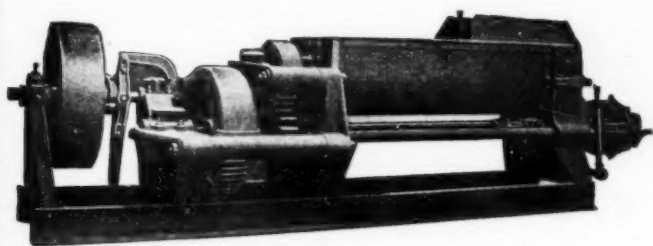
and

BRICK YARD SUPPLIES

THE FERNHOLTZ BRICK MACHINERY CO.

Boyle and Vandeventer Avenues

ST. LOUIS, MO.



Two machines—an auger machine and a pug mill—in one construction. Exceptionally strong—three bearings on every shaft; unusually accessible—all bearings readily reached. A positive forced feed obtainable with no other design of machine.

Economical to Install—because it requires but one driving belt and pulley and eliminates the structural work necessary to support a separate pug mill.

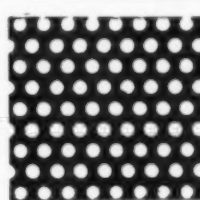
Economical to Operate—because the one set of gears creates less friction, requires less repairs, and consumes less power.

We build Union Brick Machines, Separate Auger Machines, Automatic Cutters, Pug Mills, etc., for any capacity to 150,000 daily. Our machinery is satisfying a large percentage of the most successful brickmakers in America.

E. M. FREESE & COMPANY

180 South Street

Galion, Ohio



Perforated Metal Screens

For Coal, Coke, Ore and Rock

ALSO FOR

Cotton Seed Oil Mills and Phosphate Mines
Elevator Buckets (Plain and Perforated)
Stacks and Tanks

HENDRICK MFG. CO. CARBONDALE, PA.

New York Office, 30 Church St.



No. 00



No. 3



No. 4



No. 6



No. 7



No. 8

**MANHATTAN
Perforated Metal Co.**

Office and Works: 237-239 Centre Street, New York

PERFORATORS

of all Kinds of Metals for All Industries
Write for Copper, Brass, Tin, Zinc or Aluminum Catalog:



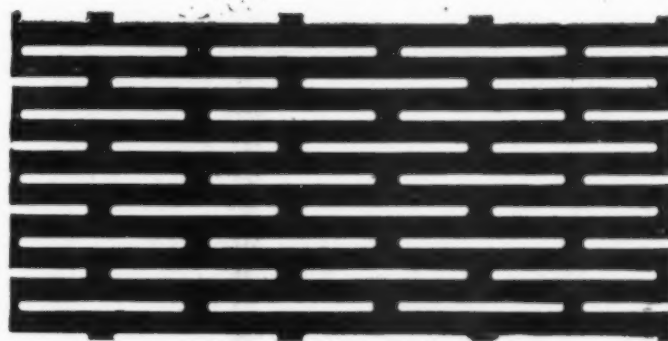
No. 22



No. 7A



No. 7



PERFORATED METALS

Perforated Screen Plates and Sheets

For Ores, Coal, Stone, Gravel,
Cement, Sand, Clay, Cotton
Seed Oil Mills, Cotton Gins,
Phosphate Mines, Fertilizer
Plants, Cyanide Works,
Chemical Works, etc.

PERFORATED STEEL FLOORS

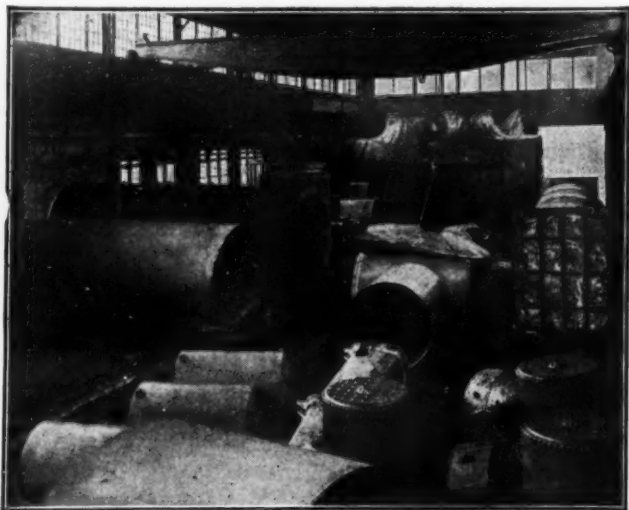
Anything in Perforated Metal

Our new catalogue will interest
every user of perforated metal

CHARLES MUNDT & SONS

490 Johnston Ave.

Jersey City, N. J.



WE BUILD ANYTHING IN STEEL PLATE CONSTRUCTION

With either Welded or Riveted Seams

WE SPECIALIZE ON EQUIPMENT FOR
WOOD ALCOHOL AND TURPENTINE
FACTORIES

Send Us Your Specifications and Inquiries

STRUTHERS-WELLS COMPANY

Works and Main Office, Warren, Pa.

New York Office, 50 Church Street

HAUSER-STANDER WOODEN TANKS

Will be on Display at
Booth Number 412

Fourth National Exhibition of Chemical Industries
Grand Central Palace, New York, N. Y.

Week of Sept. 23rd, 1918

We have an interesting booklet,
The Use of Wood in Chemical
Tanks. It is yours for the asking.

The Hauser-Stander Tank Co.
Cincinnati, Ohio



Davis Cypress Tanks

Thousands of Davis tanks in
use, many of them 20 to 30
years old, are convincing proof
of the wonderful durability of
cypress, and the skill of Davis
workmen.
Supplied in any size or shape—
get our price on a tank or a
tank and steel tower. Write
for catalog.

G. M. DAVIS & SON
PALATKA, FLA
Established 1888



Chattanooga Boiler & Tank Co. CHATTANOOGA, TENN.

If made of Steel, we make it.
Tanks anywhere for any service.

Steel Riveted Pipe Standpipes Tanks on Towers



If you contemplate the storage of water for Municipal, Sprinkler or Railway Service, write us for preliminary designs and estimates.

PITTSBURGH-DES MOINES ELEVATED STEEL TANKS

We also specialize in oil tanks, stand-pipes, bargos,
coaling stations and structural steel for any purpose.

WRITE FOR CATALOG NO. 3

PITTSBURGH-DES MOINES STEEL COMPANY

Sales Offices:

PITTSBURGH, PA. 808 Curry Building	NEW YORK CITY 54 Church Street
CHICAGO, ILL. 1265 First National Bank Bldg.	DALLAS, TEX. 1230 Praetorian Building
SAN FRANCISCO, CAL. 4317 Rialto Building	WASHINGTON 907 Munsey Bldg.

DES MOINES BRIDGE & IRON CO.

DES MOINES, IA., 946 Tuttle Street

Shops: Pittsburgh, Pa. Des Moines, Ia.
Chatham, Ontario, Canadian-Des Moines Steel Co., Limited, 265 Innes Avenue



Ware Shoals Mfg. Co.,
Ware Shoals, S. C.

Chicago Bridge & Iron Works We Specialize in the Design, Manufacture and Erection of ELEVATED STEEL TANKS AND STANDPIPES

for Municipal, Railroad and Factory Service. We also
build oil tanks, coaling stations, bridges, turntable
building and structural material.

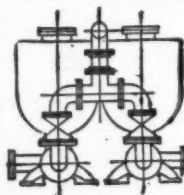
Our catalogue No. 4 gladly mailed to you upon request. With
our nearest sales office for prices, plans and specifications.

SALES OFFICES

Chicago, Ill.: 1206 West 105th St.	Jacksonville, Fla.: 805 Florida Life Bldg.
New York: 3113 Hudson Term. Bldg.	Los Angeles, Cal.: Union Oil Bldg.
Dallas, Tex.: 1608 Praetorian Bldg.	Charlotte, N. C.: Healy Bldg.
San Francisco, Cal.: Call Bldg.	Detroit, Mich.: Ford Bldg.
Seattle, Wash.: L. C. Smith Bldg.	Greenville, Pa.
Bridgeburg, Ont., Can.: 125 Janet St.	

SHOPS

EASTERN—Greenville, Pa. (Pittsburgh District.)
CENTRAL—Chicago, Illinois.
CANADIAN—Bridgeburg, Ontario.



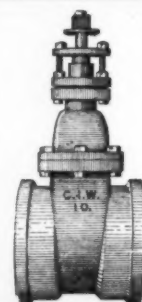
OUR BUSINESS IS TO WIN THE WAR—NOTHING ELSE COUNTS NOW

AUTOMATIC SEWAGE EJECTORS SIMPLE, EFFICIENT, ECONOMICAL

Also Miller Flushtank Siphons, Sewage Disposal
Apparatus, Centrifugal Pump Outfits,
Sewer Jointing Compounds.

PACIFIC FLUSH-TANK CO.

CHICAGO Write nearest office for catalog
interested in. NEW YORK



COLUMBIAN IRON WORKS CHATTANOOGA, TENN. MANUFACTURERS OF

Fire Hydrants, Valves, Valve Boxes,
Sluice Gates, Meter Boxes
Water-Works Supplies

ALSO MUNICIPAL AND BUILDING CASTINGS

Estimates Promptly Furnished

Eastern Agents:

THE VALVE SALES CO. No. 1 Madison Ave., NEW YORK

HEAVY CASTINGS

CAST IRON PIPE

2" to 84" Diameter

TYPE 4

FLEXIBLE



JOINTS

Special Machinery built to Engineer's Designs

UNITED STATES CAST IRON PIPE AND FOUNDRY COMPANY
714 E. Pearl Street BURLINGTON, NEW JERSEY

Sales Offices:

Philadelphia, 1421 Chestnut Street
New York, 71 Broadway
Pittsburgh, Henry W. Oliver Building
Chicago, 122 South Michigan Boulevard
Cleveland, 1150 E. 26th Street

St. Louis, Security Building
Birmingham, Ala., American Trust Building
San Francisco, Monadnock Building
Buffalo, 957 E. Ferry Street
Minneapolis, Plymouth Building

For quotations or estimates apply nearest Sales Office
For literature or special information apply Desk C, Burlington, N. J.

The Cast Iron
Pipe
That's Different



Leak Proof
Flexible
Permanent

Approved
by the Fire
Under-
writers

UNIVERSAL PIPE

—FOR EVERY SERVICE—

The Cast Iron Pipe with the Cast Iron Joint. No need for special and costly labor.
Any man can lay the standard 6 ft. lengths of Universal Pipe and make up the Universal Joints.

Durable, Permanent and Economical.

Laid anywhere
with just
Ratchet Wrenches



No Packing—No Pouring
No Gaskets

THE CENTRAL FOUNDRY COMPANY 90 WEST STREET NEW YORK

SALES OFFICES:—NEW YORK, CHICAGO, ATLANTA, DALLAS, SAN FRANCISCO, KANSAS CITY, MO.
FOUNDRIES:—BALTIMORE, MD.—LANSDALE, PENN.—NEWARK, N.J.—MEDINA, N.Y.
ANNISTON, ALA.—BESSEMER, ALA.—HOLT, ALA.—VINCENNES, IND.

Literature
and catalog
upon
request
U.S.

Glamorgan Pipe & Foundry Co.

LYNCHBURG, VA.

Manufacturers of



FOR **WATER AND GAS**

SPECIAL CASTINGS

Flanged Pipe and Flanged Fittings
General Founders and Machinists

GLAMORGAN

GLAMORGAN

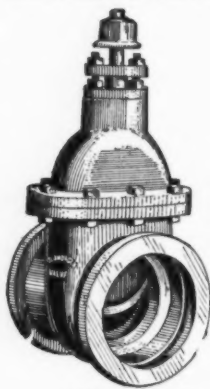


Glamorgan "Patented"
Compression Hydrants

VALVES

FOR

Water, Gas and Steam



VALVES

HYDRANTS

We solicit inquiries for Grey Iron Castings
of any description

National Cast Iron Pipe Company

Birmingham, Alabama

Manufacturers of

**CAST IRON Water and Gas Pipe, and
Fittings, Flanged Pipe, Flanged Fittings
and general castings**

SALES OFFICES:

Birmingham, Alabama

No. 1216 Peoples' Gas Building, Chicago, Ill.

No. 903 Commerce-Trust Building, Kansas City, Mo.

Blair & Co., Bankers' Investment Bldg, San Francisco, California

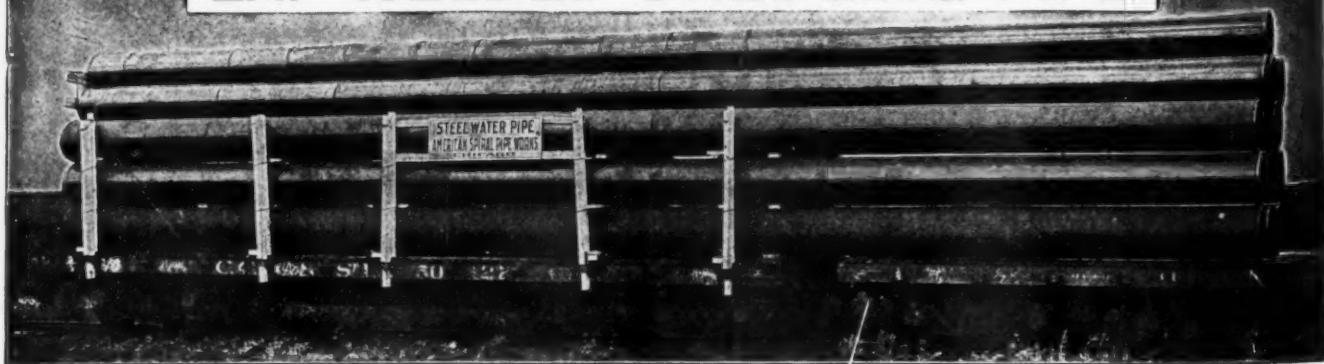


The Cast Iron Pipe Publicity Bureau

1 Broadway

NEW YORK

LAP WELDED DREDGING PIPE



24 Inches Diameter—Length 60 Feet

Large diameter, 12 to 72 inches—thickness, 1/4 to 1 1/2 inches Made up in any length required
Extensively used for dredging work and high pressure pumping mains Catalog mailed on request

AMERICAN SPIRAL PIPE WORKS,

CHICAGO, ILL.

New York Office, 50 Church Street

The Vision of a Greater Service

VISION of a service which would extend beyond the mere satisfying of everyday tubular needs has given the consumer of modern tubular products the many unique advantages and desirable qualities of "NATIONAL" Pipe:

Chemical and physical uniformity, ductility, high tensile strength, Spellerizing, 40-ft. lengths, a complete line and others of like nature.

These are the results of the constructive thought and efforts of an organization having behind it fifty years of pipe manufacturing experience, and they indicate in unmistakable manner that

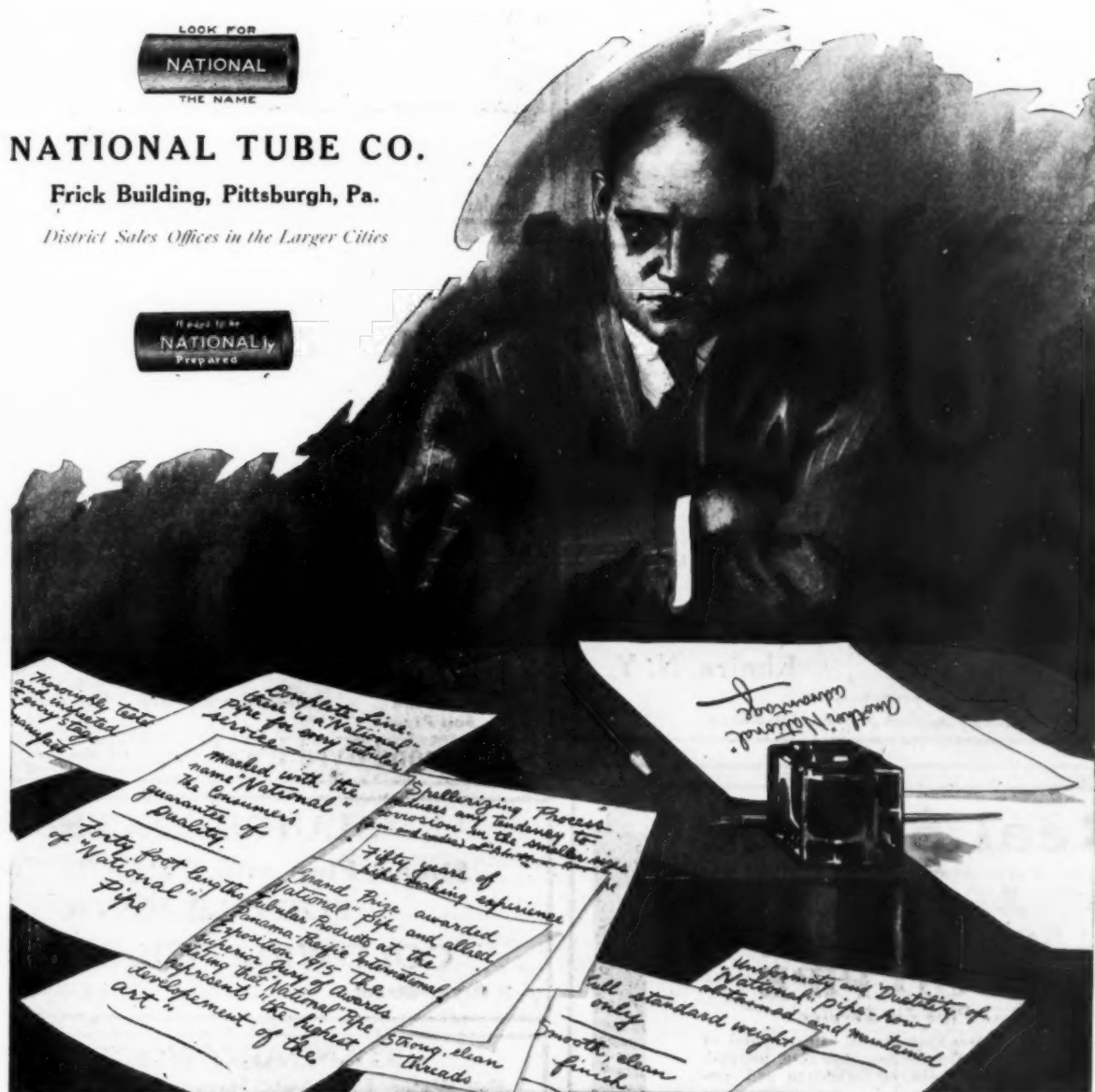
"NATIONAL" Pipe Service Is a Definite, Concrete Activity



NATIONAL TUBE CO.

Frick Building, Pittsburgh, Pa.

District Sales Offices in the Larger Cities



Thoroughly tested and inspected at every stage of manufacture.

Complete Line. There is a National Pipe for every tubular service.

Marked with the name "National" the consumer's guarantee of quality.

Forty foot lengths of "National" Pipe.

Spellerizing Process reduces any tendency to corrosion in the smaller sizes (1/2" and under) at 100,000 psi.

Fifty years of high working experience.

Grand Pipe awarded Panama-Pacific International Exposition 1915. The highest award for the highest development of the art.

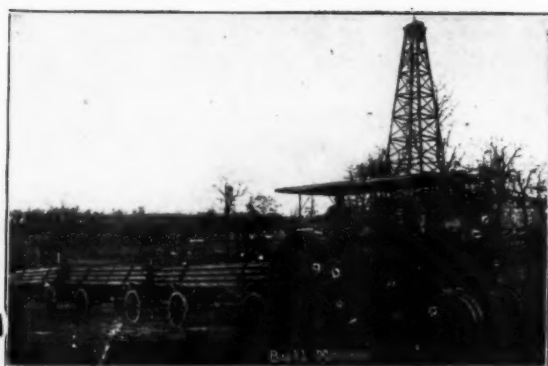
Strong, clean threads.

Uniformity and Ductility of National pipe - how obtained and maintained.

Only standard weight.

Smooth, clean finish.

Charles National. Address.



Hauling La Belle Casing in the Oklahoma Oilfields.

IN the oilfields everywhere the Fleur-de-lis Trademark is the guarantee of satisfactory Pipe. La Belle Pipe is true to size, of the finest tough, soft steel—it threads perfectly and does not kink nor buckle.

Are you getting our magazine, "True Threads"? If not drop us a card and we'll send it gladly.



Iron Works

"From Mine to Market"
General Offices: Steubenville, O.
Plants: Steubenville, O., and
Wheeling, W. Va.



PONTOON PIPE

For Dredging Purposes

—used by—

The U. S. Government

Manufactured by

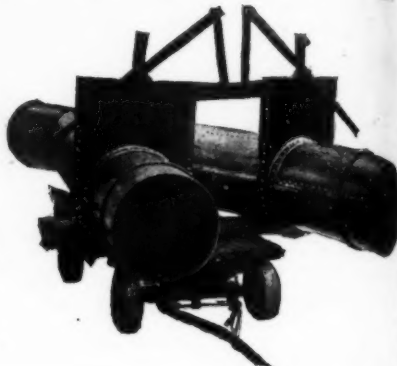
NEW BERN
IRON WORKS

&

SUPPLY CO.

(Incorporated)

New Bern, N. C.



AMERICAN CAST IRON PIPE COMPANY

Manufacturers of CAST IRON PIPE AND FITTINGS
BIRMINGHAM, ALA.

SALES OFFICES:
Birmingham, Ala., Box 908. Chicago, Ill., 512 1st Nat. Bank Bldg.
Columbus, Ohio, 607 New Hayden Bldg. Dallas, Tex., 1217 Praetorian Bldg.
Minneapolis, Minn., 712 Plymouth Bldg. Kansas City, Mo., 716 Scarritt Bldg.
New York City, No. 1 Broadway. San Francisco, Cal., 711 Balboa Bldg.

STANDARD RE-INFORCED SPIRAL PIPE

Continuous Interlocking Seam Smooth Inside

USED FOR

Water, Air, Exhaust Steam Dredging, Irrigation, Paper and Pulp Mills, Brine Circulation, and suitable for the economical conveyance of any liquid or other substance.
Standard Spiral Pipe Works, Rockwell and W. 48th Streets, Chicago



WYCKOFF WOOD PIPE

Saves Money For You

Its first cost is much lower than Cast Iron. Will not freeze. Easy to handle and cost of laying $\frac{1}{2}$ that of Cast Iron Pipe, and lasts as long. Sizes—1 inch to 48 inches in diameter. Pressures—10 lbs. to 172 lbs.

We have a booklet on Wood Pipe that would interest you.

IT'S FREE FOR THE ASKING

A. Wyckoff & Son Co., Elmira, N. Y.

Southern Representative:

H. H. WHITE, 378 Piedmont Avenue, Atlanta, Ga.

Real Service

The kind that saves money for you. The kind that gives you that ease of mind—feeling everything is O. K. That's what you get when you use

MICHIGAN WOOD PIPE

The Pipe for Service

Engineers everywhere know its real value. Think of this—will not burst, rust or clog, and costs less than iron pipe. Moral—Insist on Michigan and you can't go wrong.

Get the Michigan Book

MICHIGAN PIPE COMPANY, Madison St., BAY CITY, MICH.

Southern Representatives:

CHATTANOOGA, TENN.: Robt. R. Nixon Co., 319 Hamilton Nat. Bank Bldg.
OKLAHOMA CITY, OKLA.: F. H. Loeffler, 711 Majestic Bldg.

Salt Glazed Sewer and Culvert Pipe

Wall Coping, Drain Tile, Flue Lining, Chimney Top, Hollow Tile, Fire Proofing, Vitrified Brick, Fire Brick.

BANNON'S PATENT LIDDED PIPE FOR STEAM CONDUITS

P. BANNON PIPE CO.

LOUISVILLE, KY.



The Bourbon Copper and Brass Works Company

MANUFACTURERS OF

FIRE HYDRANTS and STOP VALVES

Water Works and Fire Department Supplies and Extension Valve Boxes

Long Distance Phone, Canal 3297

618 and 620 E. Front Street

CINCINNATI, OHIO



NATIONAL CAST IRON PIPE CO.

Water Pipe
Gas Pipe
Soil Pipe

Merchant Bar Iron

Blacksmith Coal
Foundry Coke
Pig Iron

Hammond Byrd Iron Co.

1328 Peoples Trust Bldg., Chicago, Ill.
1709-1718 Amer. Trust Bldg., Birmingham, Ala.
903 Commercial Trust Bldg., Kansas City, Mo.

SLUICE GATES

Shear, Flap and Butterfly Valves

FLEXIBLE JOINTS

COLDWELL-WILCOX CO.

2 River Street

NEWBURGH, N. Y.

STANDARD WOOD PIPE

For Water, Chemicals, Heavy Fluids and Mine Waters
WHAT ARE YOUR PIPE REQUIREMENTS?

Write for detail information and general catalogue.

Standard Wood Pipe Co.
Williamsport, Pa., U. S. A.



COOK DEEP WELL PUMPS

For Steam, Power, Direct Connection of Electric Motor, or any other convenient form of drive

SINGLE AND DOUBLE STROKE

Cook's Patent Brass Tube Well Strainers

Deep Well Cylinders

Sucker Rods and Well Tools

Deep Well Pumping Systems Installed Complete

WRITE FOR CATALOGUE NO. 14H

COOK
Single-Stroke
Deep-Well
Power Head

Cook Deep-Well Products have always been manufactured by A. D. Cook, Lawrenceburg, Indiana. The Cook Well Co., of St. Louis, Mo., a selling organization, has retired from active business and has transferred its good will and records to A. D. Cook, and in the future the customers of the Cook Well Company will receive direct service upon Cook Deep-Well Products by writing to A. D. Cook, Lawrenceburg, Indiana.

COOK
Patent
Brass Tube
Well Strainer

A. D. COOK, LAWRENCEBURG, IND.

R. D. WOOD & CO.

400 Chestnut Street

PHILADELPHIA, PA.

Centrifugal Pumps

ALL SIZES, BELT DRIVEN AND DIRECT CONNECTED

For Irrigation, Tanneries, Mine Drainage, Phosphate Mining, Circulating Water For Condensers, &c., &c.

EMERSON PUMPS

Need No Priming
—No Lubrication
—No Attention

Ready for Immediate Shipment Send for Catalog
Emerson Pump & Valve Co., Alexandria, Va.

BUSINESS Opportunities

The Manufacturers Record will place before you each week opportunities for developing your business that will be worth many times the subscription price.
MANUFACTURERS RECORD, Baltimore, Md.
\$6.50 per year 6 months, \$3.50



WELLS

HUGHES SPECIALTY WELL DRILLING CO.
CHARLESTON ATLANTA

WATER—or No Pay

We Write It In the
Contract

We Specialize in Municipal and Corporate Water Plants.
Our Consulting Hydraulic Engineers will personally inspect and report to you on the feasibility of your project.
Write today for information and free literature.

LAYNE & BOWLER COMPANY
758-770 Randolph Bldg. MEMPHIS, TENN.



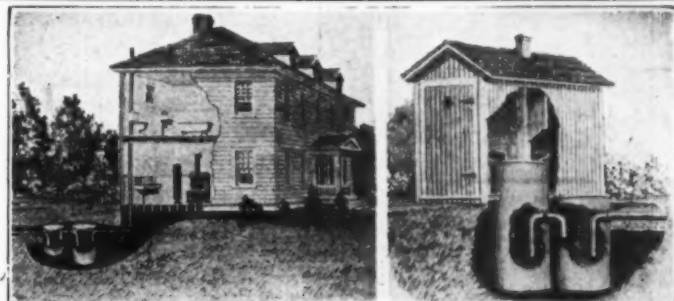
BRASS TUBE OR SCREEN?

If intake capacity were sold by the square foot, a Johnson Brass Well Screen for the same service would cost only two-thirds as much as any other brass screen. But this is not the way it's done, so we give you 50% more for the same price.

Prompt Service

Let us send you our catalog.

EDWARD E. JOHNSON, Inc. ST. PAUL, MINN.



Septic Tank System

PATENTED

Septic Closet System

"SANISEP" PORTABLE SEWERAGE SYSTEMS

TRADE MARK REGISTERED

The perfect System for industrial villages, suburban homes and schools, with or without running water. Made of reinforced concrete, with solid bottoms, and thoroughly waterproofed. All scavenger work done away with, no chemicals required, flyproof and odorless.

ENDORSED BY ALL HEALTH AUTHORITIES

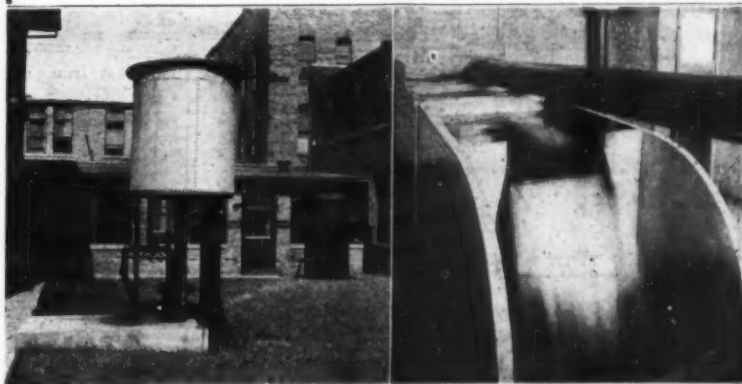
Write for Catalogue

CEMENT PRODUCTS CO., WILMINGTON, N. C.

94 Charleston St., Charleston, W. Va.

Oliver Building, Pittsburgh, Pa.

It Got the Water— at Galesburg



AT GALESBURG, ILL., 6 old wells gave but 250 gals. A new well, put down this season, is now producing 450 gallons per min. by means of a

SULLIVAN AIR LIFT

An article describing this modern pumping installation will be sent upon request. If YOU have a water-supply problem, let us help you—our advice is free.

THE RESULTS

Depth of well.....	1250 ft.	Operating air pressure.....	121 lbs.
Total lift.....	311 ft.	Gals. per min.....	450
Depth of pump.....	566 ft.	Cu. ft. air per gallon.....	1
Per cent. of submergence.....	45.8	Efficiency over all.....	87½

Bulletin 1271-C.

SULLIVAN MACHINERY COMPANY
122 So. Michigan Ave., Chicago

TRUMP TURBINES

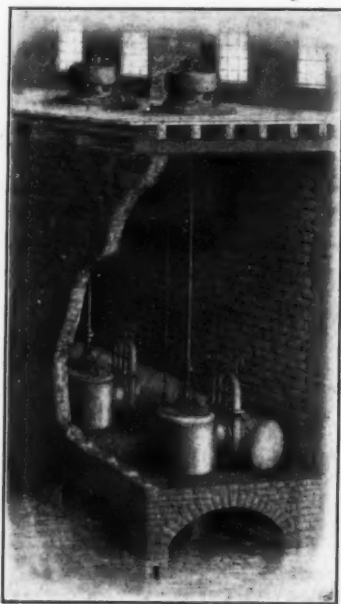
Efficiency—Durability—Design

are combined in

TRUMP TURBINES

for the development of

WATER POWER



We are pioneers in the manufacture of high power, high speed turbines for driving direct connected vertical generators. Trump turbines are built to suit the conditions, in both horizontal and vertical styles.

Forty-two years in the construction of Trump machinery places us in a position to give advice based upon sound practical experience

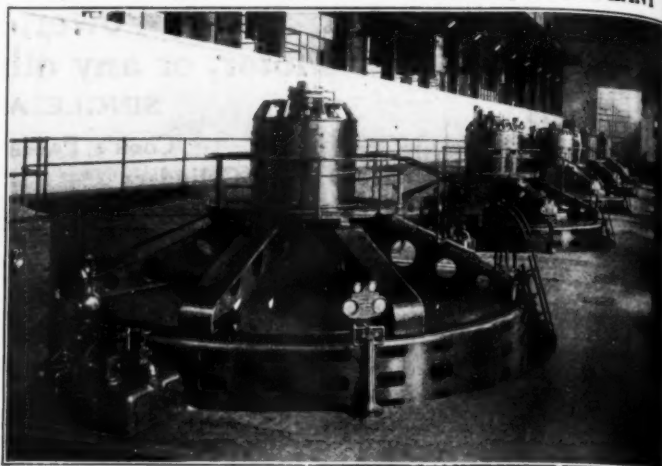
We solicit your inquiries.

THE TRUMP MFG. CO.

Greenmount Street

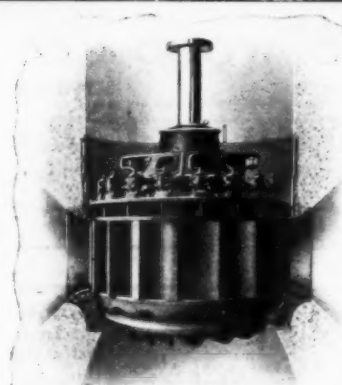
SPRINGFIELD, OHIO

SMITH TURBINES DEVELOPING 50,000 HORSE POWER IN WATEREE, S. C. PLANT



If
interested
in
water
power
development

Write
Department
"M"
for
Bulletin
of
Designs



Accompanying views illustrate the five big generators direct connected to SMITH VERTICAL SHAFT TURBINES, one of which is shown.

Many undeveloped water powers and others equipped with antiquated turbines could be thus improved by the installation of

DEPENDABLE
"SMITH"
EQUIPMENT

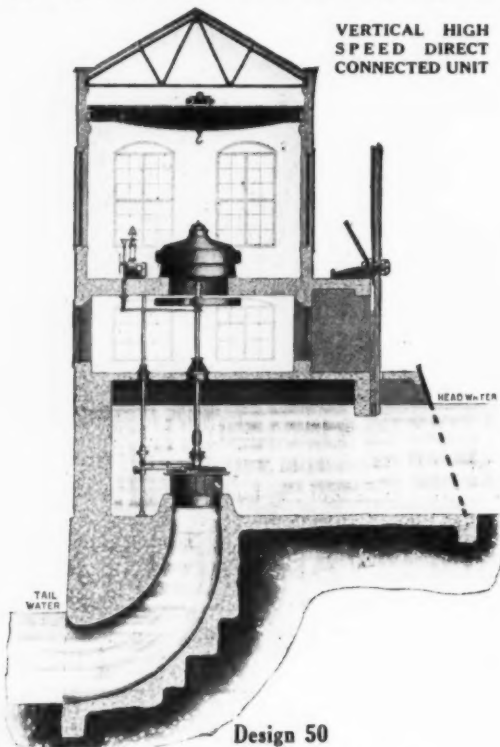
S. MORGAN SMITH CO., York, Pa.

Branch Offices: 76 W. Monroe St. CHICAGO | 176 Federal St. BOSTON | 461 Market St. SAN FRANCISCO | 405 Power Bldg. MONTREAL

LEFFEL TURBINE WATER WHEELS

VERTICAL AND HORIZONTAL DESIGNS

High Speed, High Horse Power, High Efficiency



Design 50

WRITE FOR BULLETIN 54

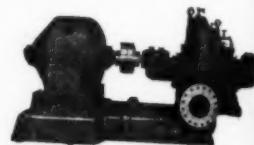
THE JAMES LEFFEL & CO., Springfield, Ohio

SALES ENGINEERS

L. B. Dow, Inc., 79 Milk St., Boston, Mass.
The Colby Engineering Co., Inc., 70 First St., Portland, Ore.
H. H. White, 378 Piedmont Ave., Atlanta, Ga.

Quality—

the most essential attribute
to Pumping Machinery—



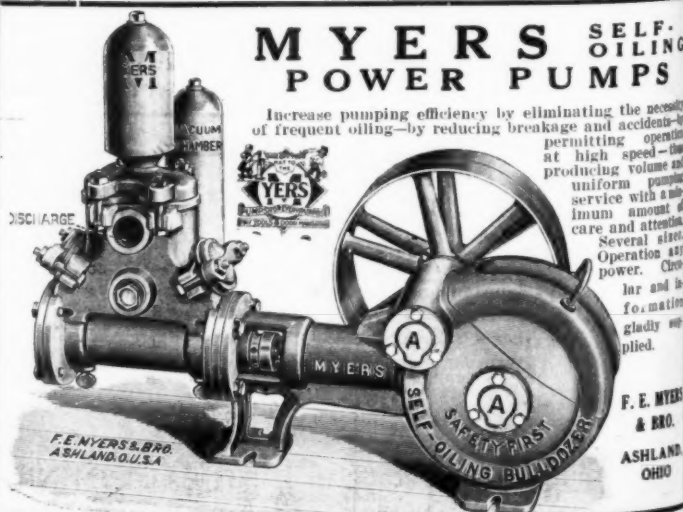
is the chief advantage of Lea-Courtenay equipment. The ultimate cost—the first cost plus maintenance and operating cost—is the main point considered by the engineer when ordering equipment, and the ultimate cost of Lea-Courtenay equipment is low. Due to its Efficiency, Economy and Reliability many of the best known engineers in the country are insisting on Lea-Courtenay Pumping Machinery.

Write for Illustrated Catalog.

LEA-COURTENAY CO.

7 MAIN STREET

NEWARK, N. J.



MYERS SELF-OILING POWER PUMPS

Increase pumping efficiency by eliminating the necessity of frequent oiling—by reducing breakage and accidents—by permitting operation at high speed—thus producing volume and uniform pumping service with a minimum amount of care and attention. Several sizes. Operation easy. power. Close and information gladly supplied.

F. E. MYERS
& BRO.
ASHLAND,
OHIO

WORTHINGTON

PUMP AND MACHINERY CORPORATION

115 BROADWAY, NEW YORK



PRINCIPAL PRODUCTS

- | | |
|----------------------------|-------------------------------|
| Air Compressors | Gas Engines |
| Acid Pumps | Hydraulic Pressure Pumps |
| Air Pumps | Marine Pumps |
| Artesian Well Pumps | Mine Pumps |
| Boiler Feed Pumps | Mining and Smelting Machinery |
| Centrifugal Pumps | Meters, Water and Oil |
| Circulating Pumps | Oil Pumps |
| Cement Making Machinery | Oil Engines |
| Condensers—Steam, Surface, | Power Pumps |
| Barometric, Jet | Ore Treating Machinery |
| Crushers—Rock and Ore | Turbine Pumps |
| Deep Well Pumps | Vacuum Pumps |
| Elevator Pumps | Volute Pumps |
| Fire Pumps | Water Works Pumping Engines |
| Gas Compressors | Wood Preserving Machinery |

WORKS

- | | |
|--|---|
| WORTHINGTON WORKS,
Harrison, N. J. | DEANE WORKS,
Holyoke, Mass. |
| BLAKE-KNOWLES WORKS,
East Cambridge, Mass. | LAIDLAW WORKS,
Elmwood Place, Cincinnati, O. |
| POWER & MINING MACHINERY
WORKS,
Cudahy, Wis. | SNOW-HOLLY WORKS,
Buffalo, N. Y. |
| INGECO ENGINE WORKS,
Cudahy, Wis. | HAZLETON WORKS,
Hazleton, Pa. |
| | PRESCOTT WORKS,
Cudahy, Wis. |

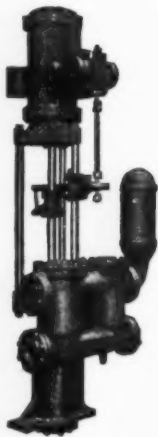
BRANCH OFFICES

- | | |
|---|---|
| ATLANTA..... 313 Trust Co. of Georgia Bldg. | LOS ANGELES..... 209-210 Higgins Bldg. |
| BIRMINGHAM..... Amer. Trust & Savgs. Bank Bldg. | MEXICO CITY..... P. O. Box 5260. |
| BOSTON..... 465 John Hancock Bldg. | NEW ORLEANS..... 533 Baronne Street. |
| BUFFALO..... 707 Iroquois Bldg. | PHILADELPHIA..... 1516 North American Bldg. |
| CHICAGO..... 820 Old Colony Bldg. | PITTSBURGH..... 407 Oliver Bldg. |
| CINCINNATI..... 1503 First National Bank Bldg. | ST. LOUIS..... 701 Laclede Gas Bldg. |
| CLEVELAND..... 304 Rockefeller Bldg. | ST. PAUL..... 613 Merchants' National Bank Bldg. |
| DENVER..... 435 Seventeenth Street. | SALT LAKE CITY..... 113 West Second South Street. |
| DETROIT..... 839 Majestic Bldg. | SAN FRANCISCO..... 306 Sharon Bldg. |
| EL PASO..... 510 Mills Bldg. | SEATTLE..... 203 Maynard Bldg. |
| HOUSTON..... 425 Southern Pacific Bldg. | TULSA..... 123 West First Street. |
| KANSAS CITY..... 825 Scarritt Bldg. | WASHINGTON, D. C..... 426 Homer Bldg. |

Catalogs will be sent on request

**LARGEST PLANTS AND FACILITIES IN THE WORLD FOR
THE PRODUCTION OF PUMPING AND MINING MACHINERY**

I 86 P



A NEW DESIGN IN

VERTICAL SINGLE MARINE PUMPS

Sizes 8x6x12 up to 16x12x27 now ready

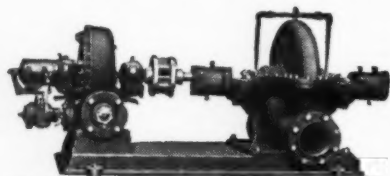
TO SUIT NAVY OR EMERGENCY FLEET SPECIFICATIONS

We are in position to quote on other pump requirements for Emergency Fleet Ships

Address All Inquiries to the Marine Department

NATIONAL TRANSIT PUMP & MACHINE COMPANY
OIL CITY, PA.

DAYTON-DICK Centrifugal Pumps

for all classes of pumping service

DAYTON-DICK TYPE US Double Suction Centrifugal Pump—Described in Detail in Bulletin 200

A Dependable Pump—
Unusually Low in Oper-
ating Cost.

Write Today for Complete
Catalog

Dayton-Dick Co.
215 Second St. QUINCY, ILL.



THE VALVE MOVEMENT

of DEAN BROS. DURABLE DUPLEX STEAM PUMP is the most important improvement that has been made on a duplex steam pump for twenty-five years.

Send for Catalog No. 104.

DEAN BROS. STEAM PUMP WORKS. INDIANAPOLIS.
NOT IN THE PUMP TRUST.



AT LAST!!
THE PUMP
THAT LASTS

TRENARY

Centrifugal Sand and Dredge Pump

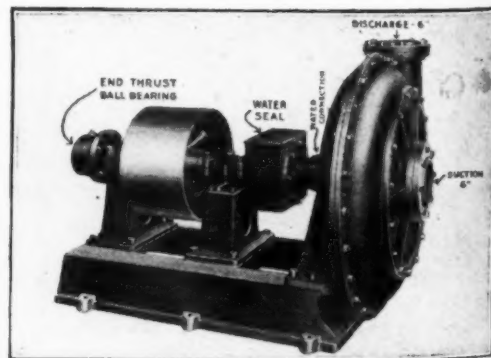
It Pumps MORE—It Pumps BETTER—It Pumps LONGER!

The "TRENARY" pumps more, because its uniformity of operation insures perfect working qualities, due to the mechanical improvements, exclusive on the "TRENARY." Namely: Ball Bearing End Thrust. Water Seal—enclosing stuffing box gland. Split Oil Ring Bearings.

The "TRENARY" pumps better because its solidity and perfect alignment of all working parts combines to do an uninterrupted run of work.

The "TRENARY" pumps longer, because it is supplied with renewable Liners and Impeler, made of the famous "VITREOUS" Metal; the hardest metal known to the iron and steel working industries.

We invite correspondence of every user of a centrifugal sand and dredge pump. We want an opportunity to give you full particulars about this "wonder pump" that is beyond any question of doubt, the premier of all pumps of its class for economy of operation; dependability of operation, and long life. Write for Bulletin.



**VITREOUS
METAL**

MUTUAL
Foundry & Machine Co.
ATLANTA
GEORGIA
U. S. A.



Fire service tanks—house supply tanks for the factory, hotel, office building, apartment house or the municipal standpipe are kept filled at the lowest cost where

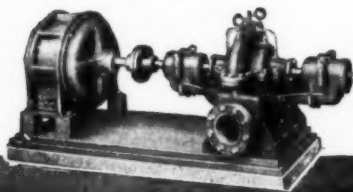
GOULDS PUMPS FOR EVERY SERVICE

are used. In addition to filling overhead tanks, they are used widely to empty, fill and circulate liquor in tanks and vats in connection with the manufacture of vinegar, yeast, paint, varnish, dyes, oil, cyanide, by-products, etc.

A Goulds pump must make good in the service you buy it for—that is the Goulds guarantee.

Shall we send a set of bulletins? A line today will bring them.

GOULDS MFG. COMPANY
SENECA FALLS, N. Y.



The Slogan of the Cameron—"Character: The Grandest Thing."



2000 Gallons a Minute Against 300 Ft. Head

The above illustration shows a Cameron No. 10 Class "LT" Multi-stage Centrifugal Pump, with a capacity of 2000 gallons per minute against 300 ft. head at 1175 R. P. M. This

CAMERON CENTRIFUGAL

has been installed in a Connecticut city water-works for the past three years, and still continues to give its initial high efficiency.

This is but one of many Cameron Centrifugal Pump water-works installations throughout the country that have proved their high efficiency.

Cameron Centrifugal Pumps embody the latest and most correct principles of Pump design, which insure high efficiency and many operating economies.

Our Engineering Department will gladly furnish full information.

Bulletin No. 7251 goes into details—it's free.

A. S. Cameron Steam Pump Works
11 Broadway, NEW YORK 15-T Offices the World Over



Certainty of Action

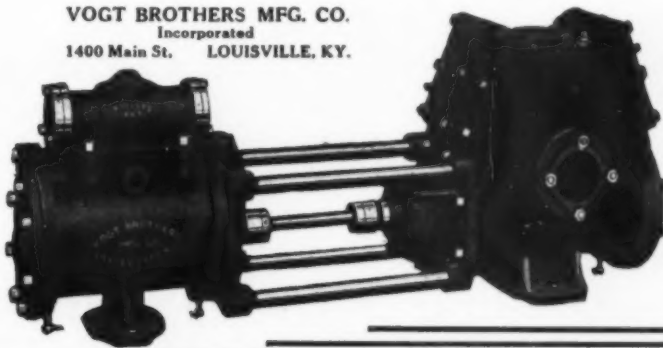
That's just *one* of the advantages of all Reilly Steam Pumps. The Reilly will operate under all steam and water pressures as long as the steam pressure is sufficient to overcome the resistance. And all Reilly Pumps are guaranteed to give good, honest, dependable service.

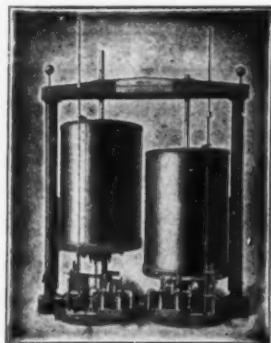
There are other reasons why the Reilly is the best for your use.

There's a Reilly Pump for every service. A Reilly Wet Vacuum Pump is illustrated below.

Write for complete information today

VOGT BROTHERS MFG. CO.
Incorporated
1400 Main St. LOUISVILLE, KY.





Oil Mill Machinery

for Cottonseed, Linseed, Mustard Seed, Rape Seed,
Soya Bean, Castor Bean, Sesame and Copra.

Hydraulic Presses
Chilled Crushing Rolls
Automatic Cake Trimmers

Hydraulic Pumps

Hydraulic Accumulators
Disc Hullers
Cake Breakers

Latest and Most Approved Types
Cotton Seed Cleaning, Hulling and Separating Machines

CAKE FORMERS—Automatic Steam,
Hand Steam, Hydraulic and
and Power.

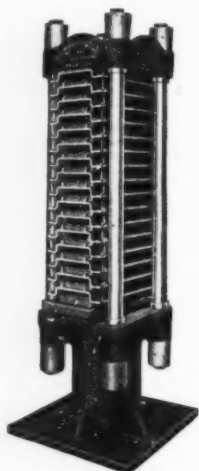
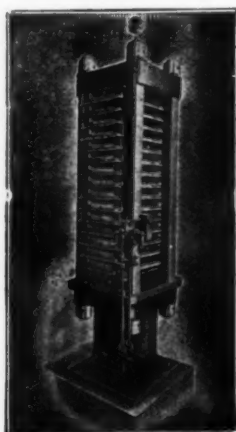
COOKERS—Horizontal, Upright and
Automatic Stack.

ATTRITION MILLS—with Patented
Wave Line Plate in which a
groove cannot be worn—for hot
or cold cake.

ACCUMULATOR SYSTEM—The
only perfect one devised.

Buckeye Iron & Brass Works

Manufacturers of Complete Equipments
Dayton, Ohio, U. S. A.



HYDRAULIC PRESS

THE MURRAY COMPANY

DALLAS, TEXAS ATLANTA, GA., U. S. A.
ENGINEERS AND BUILDERS

COMPLETE MODERN OIL MILL EQUIPMENT

Pneumatic Seed Cleaners
Automatic Linters
Ball Bearing Automatic Hullers
Steel Frame Shakers
Steel Frame Hull Beaters
Crushing Rolls
Mechanical Cookers
Automatic Steam Cake Formers
All Steel Hydraulic Presses
Power Hydraulic Pumps

Everything for an Oil Mill

Write Us for Estimates and Descriptive Matter

Knitting Machinery

FOR

Hosiery and Underwear

Established 1865

SCOTT & WILLIAMS

Incorporated

366 Broadway

NEW YORK

CROMPTON & KNOWLES LOOM WORKS LOOMS

For Every Known Woven Fabric

DOBBIES, JACQUARDS, REPAIRS

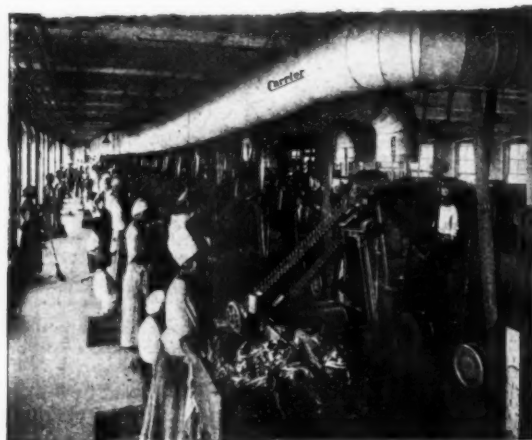
Everlasting Doupe Twine

WORCESTER, MASS.

Providence, R. I.

Philadelphia, Pa.

ALEXANDER & GARSED, CHARLOTTE, N. C.
Southern Representatives



Constant Humidity in Textile Mills Regardless of Weather

A Carrier System of Humidifying, Ventilating and Cooling equipped with automatic control will give you constant humidity, day in and day out, all the year around. It will maintain different humidities in different rooms. It will give ideal atmospheric conditions for manufacturing, so that the fibres and the materials are always in the very best condition for the various operations. Furthermore, a Carrier System will greatly reduce the temperature in summer, making your plant a good, cool place to work in during the dog days. In fact, it can be made the most comfortable spot in town.

Investigation by one of our Mill Engineers will enable us to tell you just how we can improve atmospheric conditions in your own mill or plant, and the exact savings we can make. No payment till we make good on our guarantees. At least, send for Bulletins on Air Conditioning.

Carrier Engineering Corporation



39 Cortlandt St., New York
Chicago Transportation Bldg.
Buffalo 1144 Prudential Bldg.
Boston 176 Federal St.
Philadelphia Land Title Bldg.



SAVOGRAN

INDIA ALKALI WORKS, BOSTON, MASS.

STANDARD SOLUBLE CLEANING POWDER for Forty Years
ADOPTED BY MAJORITY TEXTILE MILLS AND BUILDINGS AS
THE CLEANSER HAVING BEST AND MOST ECONOMICAL VALUE

ALSO **MARBICA** (ABRASIVE POWDER) FOR MARBLE, TERRAZZO,
TILE AND MOSAIC FLOORS.
WRITE FOR PARTICULARS

THE CARDWELL MACHINE CO.

RICHMOND, VA., U. S. A.
WE MANUFACTURE A FULL LINE OF

OIL MILL MACHINERY

Cotton Seed, Linseed, Rape-seed, Olive, Peanut, Castor, Fish & Lard Oil
HYDRAULIC BALING PRESSES, TOBACCO MACHINERY

SACO-LOWELL SHOPS Textile Machinery

Executive Office: 77 Franklin Street, Boston, Mass.
Southern Office: Rogers W. Davis, Southern Agent, Charlotte, N. C.
Shops: Biddeford, Maine; Lowell, Mass.; Newton Upper Falls, Mass.

OIL MILL BUILDERS

WE DESIGN AND SELL EQUIPMENT FOR

EXPPELLER OIL MILLS

TO WORK ALL OIL BEARING SEEDS, NUTS, AND BEANS.

BURRUSS ENGINEERING CO. ATLANTA GA

THE DOUBLE BURNISHED OR DIAMOND FINISHED
RIBBED RING WHITINSVILLE
MADE BY THE WHITINSVILLE SPINNING RING CO. MASS.
THE BEST THAT EXPERIENCE CAN PRODUCE, THAT MONEY CAN BUY

LOWELL CRAYONS

Trade-Mark
on each box

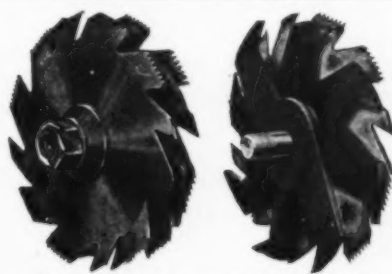
Lowell
Crayon Company
Lowell, Mass.

They lead to-day as they have for over 50 years. Used by many of the largest cotton, woolen and worsted mills. Made in 15 different colors. We were the first to make crayons. You just can't go wrong with Lowell crayons.

Anderson Oil Expeller

For Cottonseed, Peanut and
Bean Oil Mills

THE V. D. ANDERSON CO. CLEVELAND, O.



Patented Nov. 29, 1892; July 19, 1910.



Grooves Cut with Huther Bros. Dado Head

Fits Any Saw Mandrel

A Huther Bros. Dado Head consists of two outside cutters and enough inside cutters to make the required cut. This head will cut perfect grooves, with or across grain, any width. It is an easy Head to keep in perfect condition, has a simple, quick adjustment, and may be enlarged any time after purchase. Sent on approval, and if not satisfactory return at our expense.

Write for new illustrated catalog

**Huther Bros. Saw
Mfg. Co.,** 1118 University Ave., ROCHESTER, N. Y.

"Walls"

Everlasting Oilers

Our Specialties

include Oil Caps, Fillers, Torches, Hand Lamps, Ice Cans, Bells, Gongs, Belt Fasteners, etc. These Goods are warranted of the greatest possible durability, and the best obtainable quality.

Ask for Catalogue.

The P. Wall Mfg. Supply Co.
Allegheny, Pa.



of Braze Steel, specially designed for Strength. Every joint brazed with Hard Spelter. Red Heat or the roughest usage will not cause a leak.

GRUENDLER PATENT CRUSHER & PULVERIZER CO.

MANUFACTURERS OF

"CYCLONE" DUST COLLECTORS

THE MACHINE THAT COLLECTS THE MOST DUST

These are made in different sizes, and we have now

IN STOCK, READY FOR IMMEDIATE DELIVERY

EIGHT STANDARD SIZES from 30" to 84" DIAMETER.

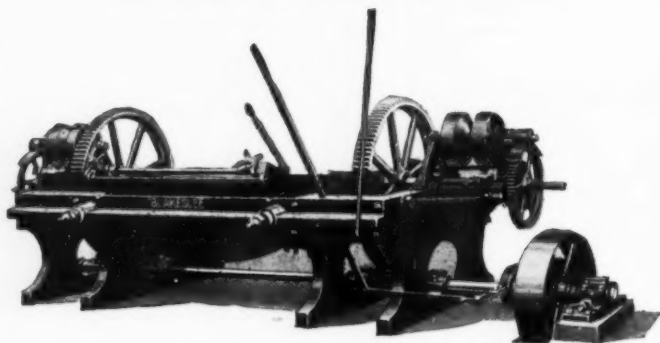
Special sizes of Collectors built to specification.

SEND FOR BLUE PRINT

Main Office and Works, 924-26-28 North First St.

ST. LOUIS, MO., U. S. A.

"BLAKESLEE"



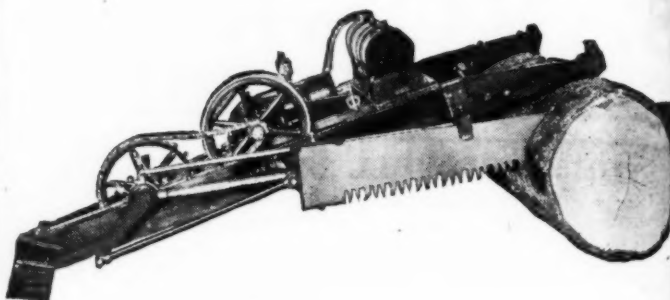
VENEER LATHE

For the Manufacture of

**General Line of Veneers, Box Shooks,
Egg Cases, Fruit and Vegetable
Packages**

A "Blakeslee" lathe will cut 18,000 to 28,000 ft. Log Scale, according to diameter of blocks, every 10-hour day into $\frac{1}{4}$ " and $\frac{1}{2}$ " Box Shooks, producing them to width, thickness and length in one operation by the use of our special features which increases output and saves labor and material.

American-Blakeslee Mfg. Co.
BIRMINGHAM, ALA., U. S. A.



Owing to the increased cost of materials and labor the price of the Vaughan Portable Gasoline Drag Saw will be advanced to \$184.00 F. O. B. Memphis, Tennessee, on November the 1st.

With more than nine thousand machines in actual use and a demand which taxes the capacity of the works, we advise that you send in your orders promptly.

Fuel will be scarce. These saws are excellent for getting out wood. Farmers, mill-men, stave and spoke and handle manufacturers are finding them absolutely essential.

CHICKASAW COOPERAGE CO.
MEMPHIS, TENN.

Dust Collecting Systems

EMERY and BUFFINGS

DUST and LINT

For Handling
SHAVINGS and SAW DUST
SMOKE and FUMES

Complete New Installations

Old Systems Remodeled

Designed, Manufactured and Erected
With Slow Speed
Low Power Equipment

Results Guaranteed

B. F. Sturtevant Blowers in Stock

SHREVEPORT BLOW-PIPE & SHEET IRON WORKS, Ltd., Shreveport, La.

LATEST IMPROVED

VENEER CUTTING MACHINES

With Impression Rolls for BASKETS, ORANGE BOXES, Etc., Etc.

Butter Dish, Berry Box, Fruit Basket, Orange Box, California Grape Basket and Truck Barrel Machinery a Specialty.

Contracts Taken for Complete Outfits

MANUFACTURED BY

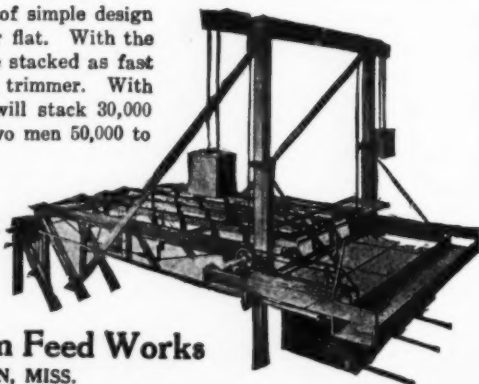
E. E. TITUS FOUNDER AND MACHINIST **Petersburg, Va.**

Soule Simplex Flat Stacker

A perfect machine of simple design for stacking lumber flat. With the Soule, lumber can be stacked as fast as it is sent over the trimmer. With one man operating will stack 30,000 feet per day; with two men 50,000 to 60,000. The many advantages of this stacker will interest you.

All told in our catalog. Write for a copy today.

SOULE Steam Feed Works
MERIDIAN, MISS.



Georgia & Florida Railway Augusta Southern Railroad

Penetrating Georgia's most attractive agricultural domain. Georgia's choicest quality farm lands with thousands of acres cut-over lands adapted to the production of livestock. High in quality—low in price.

It is here along the Georgia & Florida Railway line where the commencement is now being made, creating the much advertised standardized farm movement. As a result of this movement, attractive as it is, many thousand acres are expected to be transformed from a cut-over state to choice producing farms.

Standardized farms under the Georgia & Florida Railway plan, each has a neat, comfortable bungalow, a good barn, a portion of the land in crop, a water supply, flowers and fruit trees. A perfect home is prepared for the homeseeker. His success is assured. Healthy and a pleasant climate are two important blessings which nature has provided in this section of the State.

The heart of Georgia, the bread-basket of the Southeast, offers both large and small land investors an opportunity to place his money in good land that will increase in value.

For detailed information, write

D. F. Kirkland, General Manager, Ga. & Fla. Ry.
Augusta, Georgia

Florida Adopts Laws to Stimulate and Protect Cattle Raising

It is a matter of exceeding gratification to those who have been for a long time interested in seeing Florida take its rightful place as one of the great cattle raising States of the nation to observe the interest in all parts of the State not only in the raising of the finest breeds of cattle, but in the co-operation which has been extended on every hand to make the sanitary laws effective.

The Legislature of Florida has taken a most advanced stand in the matter of putting on the statute books laws concerning the conditions under which cattle shall be raised and maintained, and also the laws concerning the eradication of the pestilent tick.

There is no question of what can be accomplished under proper supervision in a State which has been so greatly blessed by nature, and the eyes of the world have been turned to Florida, as never in the past, as a field for investment on the part of cattle and hog raisers at a time when the world needs meat and dairy products like these products have never been needed before.

Your correspondence is invited. Inquiries may be addressed to:

MODEL LAND COMPANY OF THE FLAGLER SYSTEM

JAMES E. INGRAHAM, President

ST. AUGUSTINE, FLA.

Resources of the Clinchfield

The rapid development of the Chemical Industries in the CLINCHFIELD territory is the result of cheap power, a wealth of mineral and forestry products and the convenient supply of by-products of correlated industries; all of which are available within a narrow compass.

MINERAL PRODUCTS

BUILDING MATERIALS			METALLICS		
Sandstone	Granite	Gravel	Iron	Zinc	Stannite
Quartzite	Gneiss	Brick	Manganese	Lead	Nickel
Slate	Serpentine	Tile	Bauxite	Chromite	Tungsten
Limestone	Traprock	Cement			
Marble	Sand	Hydrated Lime			
SEMI-PRECIOUS GEMS			NON-METALLICS		
Garnets	Topaz	Cyanite	Feldspar	Gypsum	Sienna
Beryl	Moonstone	Rhodinite	Quartz	Fluorspar	Phosphate
Tourmaline	Hiddinite	Sapphire	Silica Sand	Graphite	Pyrites
Amethysts	Emerald	Rhodolite	Clays	Mica	Barytes
			Kaolin	Asbestos	Soapstone
			Salt	Ochres	Talc
FUELS		RARE EARTHS		ABRASIVES	
Coal		Rutile		Garnets	
Coke		Monazite		Corundum	
Charcoal		Samarskite		Beryl	
		Uraninite			

HARDWOODS

The hardwood forests of the Southern Appalachian region traversed by the Clinchfield represent the largest body of standing hardwood timber in the United States. These varieties, in connection with other species common to this section, include:

Oak	Walnut	Buckeye	Cherry	Hemlock
Hickory	Beech	White Pine	Chestnut	Cucumber
Maple	Birch	Yellow Pine	Spruce	Basswood
Gum	Ash		Poplar	Sycamore

For Further Information, Address the

Carolina, Clinchfield & Ohio Rwy.

Johnson City, Tenn.

SHALES

— FOR MAKING —

Acid-Proof Brick

Acid-Proof Tile

Acid-Proof Chemical Stoneware

Acid-Proof Rings for Tower Packing

There is a demand for these products in the South much greater than the supply. There is only one plant in the South, in Tennessee, manufacturing these types of materials. There is not only a large demand in the South where chemical industries are rapidly developing, but in the North and East and Middle West.

Along the Central of Georgia Railway there are deposits of shales which, from expert examination, analyses and tests, have been found unlimited in quantity, of high grade and especially suited for making these products.

Authoritative information available relative to tonnage and character of shales by our Geologist, Dr. T. Poole Maynard. Samples of shales collected by Dr. Maynard were submitted to Professor Ries of Cornell University for testing.

PHYSICAL PROPERTIES OF THESE SHALES:

Requires little water for mixing, approximately 20 per cent., resulting in a mass of good plasticity. Molds without difficulty. Tensile strength when air-dried, forty pounds to the square inch. Air shrinkage low, 3.3 per cent. Product vitrifies and becomes steel hard at 1150 degrees C. Fire shrinkage only 4.0 per cent.

OUR ADVANTAGES FOR THESE INDUSTRIES ARE:

- 1—Suitable shales of unlimited tonnage.
- 2—Shales located directly on the Central of Georgia Railway, in the Birmingham District, where there is also a large local market.
- 3—Fuel (coal) of excellent grade in immediate proximity.
- 4—Markets, large, not only in the South, but in the East and Middle West.
- 5—Labor obtained at a reasonable price.
- 6—Climate equitable, makes possible running 52 weeks in the year.

Detailed information on request. Refer to File 17428.

J. M. MALLORY, Industrial Agent

Central of Georgia Railway
Savannah, Georgia

ABRASIVE MATERIALS.

Vitrified Wheel Co., Westfield, Mass.

ACCOUNTANTS. (Certified Public.)

Baltimore Audit Co., Baltimore, Md.

Black & Co., Baltimore, Md.

Cooler & Marvin Co., Boston, Mass.

ACCUMULATOR. (Hydraulic.)

The French Oil Mfg. Co., Piqua, Ohio.

ACID EGGS.

Valley Iron Works, Williamsport, Pa.

AGENTS. (Manufacturers.)

Agency Service Corporation, Washington, D. C.

Hammond-Bryd Co., The, Birmingham, Ala.

Maple, Moore & Kirkwood, Washington, D. C.

National Manufacturers Bureau, Wash., D. C.

AGRICULTURISTS. (Consulting.)

Morse, Stanley F., New Orleans, La.

AIR CONDITIONING APPARATUS.

Carrier Engineering Corp., New York, N. Y.

AIR COMPRESSORS. (Stationary and Portable.)

Chicago Pneumatic Tool Co., Chicago, Ill.

De La Vergne Machine Co., New York, N. Y.

General Electric Co., Schenectady, N. Y.

Hardie-Tynes Mfg. Co., Birmingham, Ala.

Ingersoll-Rand Co., New York, N. Y.

Novo Engine Co., Lansing, Mich.

Sullivan Machinery Co., Chicago, Ill.

Westinghouse Tractor Brake Co., Wilmerding, Pa.

Worthington Pump & Mfg. Corp., New York, N. Y.

ALUMINUM PRODUCTS. (Bar, Sheet, Tube.)

Aluminum Company of America, Pittsburgh, Pa.

Stimpson Co., Edwin B., Brooklyn, N. Y.

AMMONIA VALVES AND FITTINGS.

Frick Co., Waynesboro, Pa.

ANTI-FRICTION METALS.

Bailey-Lehby Co., Charleston, S. C.

Dodge Sales & Engineering Co., Mishawaka, Ind.

APPRAISERS.

American Appraisal Co., The, Milwaukee, Wis.

ARCHITECTS.

Milburn, Helster & Co., Washington, D. C.

Sirtine, J. E., Greenville, S. C.

ARCHITECTS. (Landscape.)

Burnap, Geo., Washington, D. C.

Hoffman, Leon, Atlanta, Ga.

ARCHITECTS' SUPPLIES.

Starrett Co., L. S., Athol, Mass.

Weber & Co., F., Philadelphia, Pa.

ARCHITECTURAL IRON WORK.

Bolles Iron & Wire Wks., J. E., Detroit, Mich.

Chattanooga Rfg. & Fdry. Co., Chattanooga, Tenn.

Chesapeake Iron Works, Baltimore, Md.

Dietrich Brothers, Baltimore, Md.

Snead Architectural Iron Wks., Louisville, Ky.

ARMATURE WINDING.

Charlotte Electric Repair Co., Charlotte, N. C.

ART GLASS.

Blinswanger & Co., Memphis, Tenn.

ASBESTOS PRODUCTS.

Acme Asbestos Covering & Sup. Co., Chicago, Ill.

Dominion Asbestos and Rubber Corporation, New York, N. Y.

Aspromet Company, Pittsburgh, Pa.

Joins-Manville Co., H. W., New York, N. Y.

ASBESTOS ROOFING AND SIDING.

Aspromet Company, Pittsburgh, Pa.

Dominion Asbestos and Rubber Corporation, New York, N. Y.

ASH CONVEYORS.

Vacuum Ash & Soot Conveyor Co., New York.

ASPHALT.

Gulf Refining Co., Pittsburgh, Pa.

Standard Oil Co. of La., Baton Rouge, La.

Texas Co., The, New York, N. Y.

ASPHALT FILLER.

American Ballast Co., Knoxville, Tenn.

ASPHALT HEATERS.

Kinney Mfg. Co., Boston, Mass.

ASPHALT MIXERS.

Sole Machine Shops, Erie, Pa.

ASPHALT PAVING CONTRACTORS.

Southern Purchasing Co., Chattanooga, Tenn.

ASPHALT PAVING PLANTS.

Cummer & Son Co., F. D., The, Cleveland, Ohio.

Ruggles-Coles Engineering Co., York, Pa.

ASPHALT PAVING REPAIR PLANTS.

Ruggles-Coles Engineering Co., York, Pa.

AUCTIONEERS.

Conant & Co., J. E., Lowell, Mass.

Freeman & Co., Samuel T., Philadelphia, Pa.

AUDITORS.

Baltimore Audit Co., Baltimore, Md.

Black & Co., Baltimore, Md.

Cooler & Marvin Co., Boston, Mass.

AUTOMOBILE ACCESSORIES.

Bailey-Lehby Co., Charleston, S. C.

Booth Felt Co., Inc., Brooklyn, N. Y.

AXLES. (Car and Locomotive.)

American Steel Export Co., New York, N. Y.

Camden Forge Co., Camden, N. J.

BACKFILLERS.

Amer. Cement Mch. Co., Inc., Keokuk, Iowa.

BAGS. (Second-hand.)

Roanoke Scrap Iron & Metal Co., Roanoke, Va.

BALLAST. (Railroad.)

American Ballast Co., Knoxville, Tenn.

Weston & Brooker Co., Columbia, S. C.

BANKERS AND BROKERS.

Delaware Registrat' Trust Co., Wilmington, Del.

Edwards, Geo. B., New York, N. Y.

Electric Bond & Share Co., New York, N. Y.

Hornblower & Weeks, New York, N. Y.

Mercantile Trust & Deposit Co., Baltimore, Md.

Nuveen & Co., John, Chicago, Ill.

Powell, Garard & Co., Chicago, Ill.

Splitter & Co., Sidney, Toledo, Ohio.

Slayton & Co., W. L., Toledo, Ohio.

BANKS.

Bank of Alabama, Ensley, Ala.

First National Bank, Birmingham, Ala.

First National Bank, Richmond, Va.

Maryland Trust Co., Baltimore, Md.

Merchants-Mechanics First Nat. Bk., Balto., Md.

National Exchange Bk. of Balto., Baltimore, Md.

Union Trust Co., Chicago, Ill.

BANK AND OFFICE RAILINGS AND GRILLES. (Iron.)

Roller Iron & Wire Works, J. E., Detroit, Mich.

Dow Wire & Iron Works, Louisville, Ky.

Dufur & Co., Baltimore, Md.

Dufur, Baggett & Co., Baltimore, Md.

Ludlow-Saylor Wire Co., St. Louis, Mo.

Meyers Mfg. Co., F. J., Hamilton, Ohio.

Newman Mfg. Co., The, Cincinnati, Ohio.

BARGES. (Steel.)

American Bridge Co., New York, N. Y.

BARIUM PRODUCTS. (Binoxide, Chloride, Hydrate, Nitrate, etc.)

Rollin Chemical Co., Inc., Charleston, W. Va.

BARIUM SULPHATE. (Precipitated Blanc Fixe.)

Rollin Chemical Co., Inc., Charleston, W. Va.

BAR BENDERS.

Koehring Machine Co., Milwaukee, Wis.

BAR CUTTERS.

Koehring Machine Co., Milwaukee, Wis.

BAR IRON. (Refined and Galvanized.)

Aborn Steel Co., New York, N. Y.

Ames & Co., W., Jersey City, N. J.

Carnegie Steel Co., Pittsburgh, Pa.

Lackawanna Steel Co., Lackawanna, N. Y.

BARS.

Ames & Co., W., Jersey City, N. J.

RAIL SPLICE.

STEEL ROUNDS, FLATS AND SQUARES.

Aborn Steel Co., New York, N. Y.

Camden Forge Co., Camden, N. J.

Concrete Steel Co., New York, N. Y.

Gulf States Steel Co., Birmingham, Ala.

Sweet's Steel Co., Williamsport, Pa.

Trumbull Steel Co., Warren, Ohio.

BRASS, WIRE FABRIC, ETC. (For Reinforced Concrete.)

Cincinnati Iron & Steel Co., Cincinnati, Ohio.

Concrete Steel Co., New York, N. Y.

Corrugated Bar Co., Buffalo, N. Y.

General Fireproofing Co., Youngstown, Ohio.

Hoffman & Co., R. C., Inc., Baltimore, Md.

Jones & Laughlin Steel Co., Pittsburgh, Pa.

Laclede Steel Co., St. Louis, Mo.

Truscon Steel Co., Youngstown, Ohio.

BAUXITE.

Southern Minerals Corp., Boston, Mass.

BEARINGS.

Edna Brass Mfg. Co., Cincinnati, Ohio.

GRAPHITE AND BRONZE.

Bound Brook Oil-less Brng. Co., Bound Brook, N. J.

OILLESS.

Bound Brook Oil-less Brng. Co., Bound Brook, N. J.

METALINE CO., Long Island City, N. Y.

ROLLERS.

Hyatt Roller Bearing Co., New York, N. Y.

BELTING.

Bailey-Lehby Co., Charleston, S. C.

Baltimore Belting Co., Baltimore, Md.

Bradford Belting Co., Cincinnati, Ohio.

Chesapeake Belting Co., Baltimore, Md.

Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.

Druid Oak Belting Co., Inc., Baltimore, Md.

Gandy Belting Co., Cincinnati, Ohio.

Goodrich Co., B. F., Akron, Ohio.

Goodyear Tire & Rubber Co., Akron, Ohio.

Graton & Knight Mfg. Co., Worcester, Mass.

Main Belting Co., Philadelphia, Pa.

Schieren Co., Chas. A., New York, N. Y.

Smith-Courtesy Co., Richmond, Va.

CHAINS.

Caldwell & Son Co., H. W., Chicago, Ill.

Jeffrey Mfg. Co., Columbus, O.

Link-Belt Co., Philadelphia, Pa.

Morse Chain Co., Ithaca, N. Y.

BELT CEMENT.

Du Pont de Nemours & Co., E. I., Wilmeton, Del.

Graton & Knight Mfg. Co., Worcester, Mass.

Schieren Co., Chas. A., New York, N. Y.

BELT CONVEYORS.

Alvey-Ferguson Co., Inc., Cincinnati, Ohio.

Alvey Manufacturing Co., St. Louis, Mo.

Bartlett & Snow Co., The C. O., Cleveland, O.

Jeffrey Mfg. Co., Columbus, Ohio.

Lansum Co., The, Boston, Mass.

Portable Machine Co., Passaic, N. J.

Robins Conveying Belt Co., New York, N. Y.

Webster Mfg. Co., Tiffin, Ohio.

BELT DRESSING.

Dixon Crucible Co., Joseph, Jersey City, N. J.

Gandy Belting Co., Baltimore, Md.

Graton & Knight Mfg. Co., Worcester, Mass.

Schieren Co., Chas. A., New York, N. Y.

BELT LACING. (Leather.)

Graton & Knight Mfg. Co., Worcester, Mass.

Schieren Co., Chas. A., New York, N. Y.

BERTHS AND BUNKS. (For Ships and Contrs.)

Southern-Rome Co., Baltimore, Md.

BICARBONATE SODA. (Sap Stain Lmbr. Dip.)

Church & Dwight Co., New York, N. Y.

Du Pont de Nemours & Co., E. I., Wilmeton, Del.

BILLETS. (Basic Open Hearth.)

Atlantic Steel Co., Atlanta, Ga.

Gulf States Steel Co., Birmingham, Ala.

BLANK FIXE.

Rollin Chemical Co., Inc., Charleston, W. Va.

BLEACHING MATERIALS.

Wolf & Co., Jacques, Passaic, N. J.

BLOCKS.

Wright Mfg. Co., Lisbon, Ohio.

CHAIN.

American Cresote Works, New Orleans, La.

PAVING CEMENTS.

Block Fillers. (Paving.)

Barrett Co., New York, N. Y.

Standard Oil Co. of La., Baton Rouge, La.

BLOWERS AND EXHAUST FANS.

Buffalo Forge Co., Buffalo, N. Y.

Clavage Fan Co., Kalamazoo, Mich.

Clinton-Frat Co., The, Cincinnati, Ohio.

Duriron Castings Co., Dayton, Ohio.

General Electric Co., Schenectady, N. Y.

Green Fuel Economizer Co., New York, N. Y.

National Blow Pipe & Mfg. Co., New Orleans, La.

BLOW PIPES.

National Blow Pipe & Mfg. Co., New Orleans, La.

Shreveport Blow Pipe & S. I. Wks., Shreveport, La.

BOILERS.

Abendroth & Root Mfg. Co., Newburgh, N. Y.

Ames Iron Works, Oswego, N. Y.

Babcock & Wilcox Co., New York, N. Y.

Cape Fear Machine Works, Wilmington, N. C.

Casey-Hedges Co., Chattanooga, Tenn.

Chattanooga Boiler & Tank Co., Chattanooga, Tenn.

Davis, J. F., Chicago, Ill.

Erie City Iron Works, Erie, Pa.

Harris Bros. Co., Chicago, Ill.

Hartley Boiler Works, Montgomery, Ala.

Houston, Stanwood & Gamble Co., The, Cinn., O.

Lombard Iron Works, Augusta, Ga.

Lookout Boiler & Mfg. Co., Chattanooga, Tenn.

Malby Machinery Co., Jacksonville, Fla.

Mecklenburg Iron Works, Charlotte, N. C.

Murray Iron Works Co., Burlington, Iowa.

Schiefel Iron Works, Macon, Ga.

Southern Boiler & Tank Works, Memphis, Tenn.

Union Iron Works, Erie, Pa.

Valk & Murdoch Co., Charleston, S. C.

Vogt Machine Co., Inc., Henry, Louisville, Ky.

Walsh & Weldner Boiler Co., Chattanooga, Tenn.

Zeluck Supply Co., Walter A., St. Louis, Mo.

BOILER COVERINGS.

Magnesia Association of America, Phila., Pa.

BOILER GRAPHITE.

Dixon Crucible Co., Joseph, Jersey City, N. J.

BOILER SEAM PROTECTOR.

National Boiler Protector Co., Dayton, Ohio.

BOLTS, NUTS, RIVETS, STUDS, WASHERS.

Ames & Co., W., Jersey City, N. J.

Bethlehem Steel Co., South Bethlehem, Pa.

Frank, Jr., Henry, New York, N. Y.

Hoffman & Co., R. C., Inc., Baltimore, Md.

Midvale Steel & Ordnance Co., Philadelphia, Pa.

Milton Mfg. Co., Milton, Pa.

Progressive Mfg. Co., Torrington, Conn.

Republic Iron & Steel Co., Youngstown, Ohio.

Russell, Burdall & Ward Bolt and Nut Co., Chester, N. Y.

Stimpson Co., Edwin B., Brooklyn, N. Y.

St. Louis Screw Co., St. Louis, Mo.

Topping Bros., New York, N. Y.

BOLT AND NUT MACHINERY.

Webster & Perks Tool Co., The, Springfield, O.

BOND BUTTERS.

Hanchett Bond Co., The, Chicago, Ill.

Hornblower & Weeks, New York, N. Y.

Mercantile Trust & Deposit Co., Baltimore, Md.

Nuveen & Co., Chicago, Ill.

Powell, Garard & Co., Chicago, Ill.

- CHEMICALS.**
Baltimore Chemical Co., Baltimore, Md.
Baltimore Chemical Works, New York, N. Y.
Baltimore Chemical Co., Inc., Charleston, W. Va.
- CHEMICAL PLANT ACCESSORIES.**
Birmingham Mach. & Fdy. Co., Birmingham, Ala.
Valley Iron Works, Williamsport, Pa.
Warner Chemical Co., New York, N. Y.
- CHEMICAL CASTINGS. (Acid Proof.)**
Barton Castings Co., Dayton, O.
- CHIMNEYS.**
CONCRETE.
East Engineering Co., The, Pittsburgh, Pa.
RADIAL BEICK.
East Engineering Co., The, Pittsburgh, Pa.
CHLORIDE ACCUMULATOR.
Elec. Storage Battery Co., The, Philadelphia, Pa.
CHLORINE GAS APPARATUS.
Wagner Chemical Co., New York, N. Y.
- CLEANING COMPOUND. (Floors, etc.)**
Jolly Alkali Works, Boston, Mass.
- CLOCKS. (Watchman's Portable.)**
Geo. Clock Co., Boston, Mass.
Newman Clock Co., New York, N. Y.
- CLUTCHES. (Friction.)**
Gibson Co., W. E., Louisville, Ky.
Dodge Sales & Engr. Co., Milwaukee, Ind.
Hoffman Patent Pulley Co., St. Louis, Mo.
Webster Mfg. Co., Tiffin, Ohio.
- COAL.**
The Alabama Co., Birmingham, Ala.
Consolidation Coal Co., Inc., New York, N. Y.
Hammond-Bryd Co., The, Birmingham, Ala.
Tennessee Coal, Iron & R. R. Co., B'ham'g'm, Ala.
- COAL CUTTERS.**
Jeffrey Mfg. Co., Columbus, Ohio.
- COAL HANDLING MACHINERY.**
Bartlett & Snow Co., The, C. O., Cleveland, O.
Holtz Mfg. Co., New York, N. Y.
Howard Co., New York, N. Y.
Hunt Co., Inc., C. W., West New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio.
Lakeland Mfg. Co., Inc., Passaic, N. J.
Robins Conveying Belt Co., New York, N. Y.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Webster Mfg. Co., Tiffin, Ohio.
Weller Mfg. Co., Chicago, Ill.
Wellman-Leaver-Morgan Co., The, Cleveland, O.
- COAL TAR AND BY-PRODUCTS.**
Bartlett Co., New York, N. Y.
- COAL TAR.**
Brier Hill Steel Co., Youngstown, Ohio.
- COAL TIPPERS.**
American Bridge Co., New York, N. Y.
Bartlett Co., Indianapolis, Ind.
Webster Mfg. Co., Tiffin, Ohio.
- COCKS. (Acid Proof.)**
Barton Casting Co., Dayton, Ohio.
- COIL MAKING. (Armature and Field.)**
Charlotte Elec. Repair Co., Charlotte, N. C.
- COKE.**
Alabama Co., The, Birmingham, Ala.
Brier Hill Steel Co., Youngstown, Ohio.
Tennessee Coal, Iron & R. R. Co., B'ham'g'm, Ala.
- COKE OVENS. (By-Products.)**
Koppers Co., H., Pittsburgh, Pa.
Bryd Co., S. H., Pittsburgh, Pa.
- COKE OVEN MACHINERY.**
Wellman-Leaver-Morgan Co., The, Cleveland, O.
- COLD STORAGE DOORS.**
Brecht Co., The, St. Louis, Mo.
- COLLARS. (Shaft.)**
Bartlett & Mach. Co., Manheim, Pa.
- COLUMNS. (Cast Iron.)**
C. & Cast Iron Pipe & Fdy. Co., Burlington, N. J.
- CONCENTRATING APPARATUS.**
Barton Casting Co., Dayton, O.
- CONCRETE CONSTRUCTION. (Reinforced.)**
Agnew Company, Pittsburgh, Pa.
Corrugated Bar Co., Buffalo, N. Y.
General Piping Co., Youngstown, Ohio.
East Engineering Co., The, Pittsburgh, Pa.
- CONCRETE CURB PROTECTOR. (Steel.)**
Trucon Steel Co., Youngstown, Ohio.
Don Bros. Steam Pump Wks., Indianapolis, Ind.
Northwestern Steel & Iron Wks., Eau Claire, Wis.
- CONCRETE REINFORCING BARS.**
Corrugated Steel Co., Pittsburgh, Pa.
Corrugated Bar Co., Buffalo, N. Y.
Dietrich Brothers, Baltimore, Md.
Gibson Steel Co., Birmingham, Ala.
Hoffman & Co., R. C., Baltimore, Md.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Lackawanna Steel Co., Lackawanna, N. Y.
Laclede Steel Co., St. Louis, Mo.
Republic Iron & Steel Co., Youngstown, Ohio.
Steel Co., The, Williamsport, Pa.
- CONCRETE REINFORCING WIRE AND WIRE FABRIC.**
American Steel & Wire Co., Chicago, Ill.
Consolidated Expanded Metal Co., Braddock, Pa.
- CONDENSERS. (Acid Proof.)**
Brown-Morris Co., Philadelphia, Pa.
Don Bros. Steam Pump Wks., Indianapolis, Ind.
Westinghouse Elec. & Mfg. Co., New York, N. Y.
Westinghouse Pump & Mch. Corp., New York, N. Y.
- CONDENSERS. (Mild Proof.)**
Barton Casting Co., Dayton, Ohio.
- CONDUITS. (Electrical, Interior, Steel.)**
National Metal Molding Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.
- CONDUIT FITTINGS.**
National Metal Molding Co., Pittsburgh, Pa.
- CONTRACTORS.**
BUILDERS.
Austin Co., The, Cleveland, Ohio.
Concrete Steel Bridge Co., The, Clarkburg, W. Va.
Foundation Co., The, New York, N. Y.
McKinney Const. Co., John T., Lynchburg, Va.
Stone & Webster, Boston, Mass.
Trucon Church Kerr & Co., New York, N. Y.
White Corp., J. G., New York, N. Y.
- DRAINAGE.**
Atlantic, Gulf & Pacific Co., New York, N. Y.
- DREDGING.**
Atlantic, Gulf & Pacific Co., New York, N. Y.
- GENERAL.**
Foundation Co., The, New York, N. Y.
Lane & Co., Inc., C. W., Atlanta, Ga.
Stone & Webster, Boston, Mass.
White Corp., J. G., New York, N. Y.
- GRADING.**
Ireland, T. M., Baltimore, Md.
- HAULING.**
Ireland, T. M., Baltimore, Md.
- POWER PLANTS.**
Allen Scales Engr. Co., Inc., Nashville, Tenn.
- RAILROAD.**
Atlantic Equipment Co., New York, N. Y.
Ireland, T. M., Baltimore, Md.
Johnson Co., Wm. T., Cincinnati, Ohio.
Richmond Mill Supply Co., Richmond, Va.
- REINFORCED CONCRETE.**
Concrete Steel Bridge Co., The, Clarkburg, W. Va.
Foundation Co., The, New York, N. Y.
Lane & Co., Inc., C. W., Atlanta, Ga.
- ROAD AND STREET PAVING.**
Lane & Co., Inc., C. W., Atlanta, Ga.
McCrory Co., J. B., Atlanta, Ga.
McKinney Const. Co., John T., Lynchburg, Va.
Southern Purchasing Co., Chattanooga, Tenn.
- SEWER AND WATER WORKS.**
Lane & Co., Inc., C. W., Atlanta, Ga.
McCrory Co., J. B., Atlanta, Ga.
- CONTRACTORS' MCHY. AND SUPPLIES.**
Amer. Metallic Packing Co., Inc., Lexington, Ky.
American Rwy. Equipment Co., Pittsburgh, Pa.
Atlantic Equipment Co., New York, N. Y.
Austin Mfg. Co., Chicago, Ill.
Bay City Dredge Co., Bay City, Mich.
Bean & Son, W. B., Jacksonville, Fla.
Beckwith Machinery Co., The, Pittsburgh, Pa.
Bruch, H. M., Syracuse, N. Y.
Buffalo Hoist & Derrick Co., New York, N. Y.
Byers Mach. Co., The, John F., Havana, O.
Cartier Lumber Co., Beaufort, N. C.
Con. Mch. & Wks. Co., Inc., New York, N. Y.
Empire Engineering Co., Inc., New York, N. Y.
Flory Mfg. Co., S., Bangor, Pa.
General Equipment Co., New York, N. Y.
Greene, John W., Philadelphia, Pa.
Henry, Frank, Jr., New York, N. Y.
Hartfelder-Garber & Schaefer, Savannah, Ga.
Hodgson Mch. Co., Knoxville, Tenn.
Hoisting Engine Sales Co., Inc., New York, N. Y.
Hoisting Machinery Co., New York, N. Y.
Houston Railway Const. Co., Houston, Tex.
Ingersoll-Rand Co., New York, N. Y.
Inley Manufacturing Co., Indianapolis, Ind.
Jaeger Machine Co., The, Columbus, Ohio.
Jones Machinery Co., K. L., Atlanta, Ga.
Joseph Iron Co., The, Isaac, Cincinnati, O.
Kleinhaus Co., H., Pittsburgh, Pa.
Lower Co., W. B., Chicago, Ill.
Machine Exchange Co., New Orleans, La.
Machinery & Supply Co., Greensboro, N. C.
Massey Machinery Corp., Baltimore, Md.
Marine Metal & Supply Co., New York, N. Y.
May & Turner Co., Atlanta, Ga.
Mayer, F., Chicago, Ill.
Meighan, John F., New York, N. Y.
Modern Mch. Exchange, New York, N. Y.
Monaghan Mch. Co., Chicago, Ill.
Motters' Sons, Geo. F., York, Pa.
National Equipment Corp., Philadelphia, Pa.
Northwestern Steel & Iron Wks., Eau Claire, Wis.
Novo Engine Co., Lansing, Mich.
Pipe & Contractors' Supply Co., New York, N. Y.
Pittsburgh Mch. & Equip. Co., Pittsburgh, Pa.
Scully-Jones & Co., Chicago, Ill.
Seeger-Walraven Co., Atlanta, Ga.
Shaw, Willis, Chicago, Ill.
Sherwood, E. C., New York, N. Y.
Simmons-Briggs Co., Memphis, Tenn.
South Side Fdy. & Mch. Wks., Charleston, W. Va.
Southern Machinery Co., Knoxville, Tenn.
Southern States Steel Co., New Orleans, La.
Standard Scale & Supply Co., Pittsburgh, Pa.
Stark Co., S. L., Pittsburgh, Pa.
Sterling Iron & Steel Co., Philadelphia, Pa.
Sun Power Equipment Co., Philadelphia, Pa.
Terwilliger Equipment Co., Philadelphia, Pa.
Tilley Co., Inc., J. G., Bristol, Va.
Torbert, A. C., Chicago, Ill.
United Machine Works, New York, N. Y.
Whayne Supply Co., Roy, C., Louisville, Ky.
- CONTRACT WORK BY SOUTHERN FIRMS.**
(See following classifications.)
- BOILER AND TANK WORK.**
CASTINGS.
FORGING.
FOURDRAIT AND MACHINE SHOPS.
GEAR CUTTING.
MACHINERY. (Special.)
ORNAMENTAL IRON WORK.
PATTERN MAKING.
SHEET METAL WORK.
STRUCTURAL STEEL AND IRON.
WELDING PLANTS.
American Blackless Mfg. Co., Birmingham, Ala.
Cape Fear Mch. Wks., Wilmington, N. C.
Folts Mfg. & Supply Co., Hagerstown, Md.
Hammond-Bryd Co., Birmingham, Ala.
Hardie-Tynes Mfg. Co., Birmingham, Ala.
Anney & Co., Montgomery, Ala.
Kentucky Electrical Co., Owensboro, Ky.
Laclede Iron Works, St. Louis, Mo.
Lafayette Iron Works Co., Raleigh, N. C.
Roanoke Iron & Bridge Wks., Inc., Roanoke, Va.
Southern Foundry Co., Owensboro, Ky.
Stratton & Bragg, Petersburg, Va.
Strickland Machine Co., Richmond, Va.
Warren Steel Casting Co., St. Louis, Mo.
- CONVEYING & ELEVATING MACHINERY.**
Alvey Ferguson Co., Inc., Cincinnati, Ohio.
Alvey Manufacturing Co., St. Louis, Mo.
Bartlett & Snow Co., The, C. O., Cleveland, Ohio.
Caldwell & Son, C. W., Chicago, Ill.
Hunt Co., Inc., C. W., West New Brighton, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio.
Lamson Co., The, Boston, Mass.
Lidgerwood Mfg. Co., New York, N. Y.
Link-Belt Co., Philadelphia, Pa.
Main Belting Co., Philadelphia, Pa.
Mathews Gravity Carrier Co., Elwood City, Pa.
McLanahan-Stone Mch. Co., Hollidaysburg, Pa.
Portable Machinery Co., Inc., Passaic, N. J.
Robins Conveying Belt Co., New York, N. Y.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Webster Mfg. Co., Tiffin, Ohio.
Weller Mfg. Co., Chicago, Ill.
- CONVEYORS. (Ash.)**
Vacuum Ash & Soot Conveyor Co., New York.
- COOLING PONDS.**
Spray Engineering Co., Boston, Mass.
- COPPER. (Boron-Alloying.) [Shot.]**
American Boron Products Co., Reading, Pa.
- CORDAGE.**
Broderick & Bascom Rope Co., St. Louis, Mo.
Columbian Rope Co., Auburn, N. Y.
Waterbury Co., New York, N. Y.
- CORN-MILL MACHINERY.**
Davis Foundry & Machine Works, Rome, Ga.
Starr Co., B. F., Baltimore, Md.
Wolf Co., Chambersburg, Pa.
- COTTON DUCK.**
Turner-Hasley Co., New York, N. Y.
- COTTON-GIN MACHINERY.**
Continental Gin Co., Birmingham, Ala.
Murray Co., The, Atlanta, Ga.
- COTTON-MILL MACHINERY.**
Crompton & Knowles Loom Wks., Worcester, Mass.
Draper Corp., Hopedale, Mass.
Raco-Lowell Shop, Boston, Mass.
Whitinsville, Spinn'g Ring Co., Whitinsville, Mass.
- COTTON-MILL SUPPLIES.**
Crompton & Knowles Loom Wks., Worcester, Mass.
Whitinsville Spinn'g Ring Co., Whitinsville, Mass.
- COTTONSEED-OIL MACHINERY.**
Anderson Co., The, V. D., Cleveland, Ohio.
Buckeye Iron & Brass Works, Dayton, Ohio.
Buckeye Engineering Co., Atlanta, Ga.
Cardwell Machine Co., Richmond, Va.
Continental Gin Co., Birmingham, Ala.
French Oil Mill Machinery Co., Piqua, Ohio.
Murray Co., The, Atlanta, Ga.
- COUPLINGS.**
American Spiral Pipe Works, Chicago, Ill.
Bond Fdy. & Mch. Co., Manheim, Pa.
Goldens' Fdy. & Mch. Co., Columbus, Ga.
Woods' Sons Co., T. B., Chambersburg, Pa.
- COVERINGS. (Pipe, Boilers, etc.)**
Acme Asbestos Covering & Sup. Co., Chicago, Ill.
Johns-Manville Co., H. W., New York, N. Y.
Magnesia Association of America, Phila., Pa.
Wyckoff & Son Co., A., Elmira, N. Y.
- CRANES.**
JIB.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Whitinsville Foundry Equipment Co., Harvey, Ill.
- ELECTRIC TRAVELING.**
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Whitinsville Foundry Equipment Co., Harvey, Ill.
- SPECIAL.**
Wellman-Leaver-Morgan Co., The, Cleveland, O.
- TRAVELING, HAND, POWER, HYDRAULIC.**
Chesapeake Iron Works, Baltimore, Md.
Niles-Bement-Pond Co., New York, N. Y.
Shepard Electric Crane & Hoist Co., Montour Falls, N. Y.
Spindel, J. G., Reading, Pa.
Whitinsville Foundry Equipment Co., Harvey, Ill.
- LOCOMOTIVE.**
Ball Engine Co., (Erie Steam Shovel Co.) Erie, Pa.
Link-Belt Co., Philadelphia, Pa.
- CRAYONS.**
DeSoto Talc Co., The, Chatsworth, Ga.
Harford Talc Co., Inc., The, Baltimore, Md.
Lowell Crayon Co., Lowell, Mass.
- CREOSOTED MATERIALS.**
Barrett Co., New York, N. Y.
Republic Creosoting Co., Indianapolis, Ind.
- CREOSOTING. (Wood Materials.)**
American Creosote Works, New Orleans, La.
National Lbr. & Creos. Co., Texarkana, Ark.
Southern Creosoting Co., Ltd., Slidell, La.
Southern Paving Const. Co., Chattanooga, Tenn.
Southern Wood Preserving Co., Atlanta, Ga.
- CREOSOTING EQUIPMENT.**
Casey-Hedges Co., Chattanooga, Tenn.
Struthers-Wells Co., Warren, Pa.
- CROSSARMS. (Creosoted.)**
American Creosote Works, New Orleans, La.
Creosoted Materials Co., Inc., New Orleans, La.
Southern Creosoting Co., Ltd., Slidell, La.
Southern Paving Const. Co., Chattanooga, Tenn.
Southern Wood Preserving Co., Atlanta, Ga.
- CROSTIES. (Creosoted.)**
American Creosote Works, New Orleans, La.
Creosoted Materials Co., Inc., New Orleans, La.
Southern Creosoting Co., Ltd., Slidell, La.
Southern Paving Const. Co., Chattanooga, Tenn.
Southern Wood Preserving Co., Atlanta, Ga.
- CROSTIES.**
Carnegie Steel Co., Pittsburgh, Pa.
- CRUSHED STONE.**
Small Quarries Co., A. T., Macon, Ga.
- CRUSHEDSTONE. (Road Conc'te and Ballast.)**
American Ballast Co., Knoxville, Tenn.
Small Quarries Co., A. T., Macon, Ga.
Weston & Brooker Co., Columbia, S. C.
- CRUSHERS.**
COAL AND COKE.
Bartlett & Snow Co., The, C. O., Cleveland, O.
Jeffrey Mfg. Co., Columbus, Ohio.
Link-Belt Co., Philadelphia, Pa.
- CORN AND COB.**
Gruendler Pat. Crusher & Pulv. Co., St. Louis, Mo.
Williams Pat. Crusher & Pulv. Co., Chicago, Ill.
- ROCK.**
American Pulverizer Co., St. Louis, Mo.
Austin Mfg. Co., Chicago, Ill.
Buchanan Co., Inc., C. G., New York, N. Y.
Fuller-Lehigh Co., Fullerton, Pa.
Traylor Eng. & Mfg. Co., Allentown, Pa.
Universal Road Mch. Co., Kingston, N. Y.
Western Wheeled Scraper Co., Aurora, Ill.
- CRUSHING & PULVERIZING MACHINERY.**
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Austin Mfg. Co., Chicago, Ill.
Bartlett & Snow Co., The, C. O., Cleveland, Ohio.
Buchanan Co., Inc., C. G., New York, N. Y.
Fuller-Lehigh Co., Fullerton, Pa.
Gruendler Pat. Crusher & Pulv. Co., St. Louis, Mo.
Jeffrey Mfg. Co., Columbus, Ohio.
K-B Pulverizer Co., Inc., New York, N. Y.
McLanahan-Stone Mch. Co., Hollidaysburg, Pa.
Raymond Bros., Impact, Pa.
Traylor Eng. & Mfg. Co., Allentown, Pa.
Western Wheeled Scraper Co., Aurora, Ill.
Worthington Pump & Mch. Corp., New York, N. Y.
Williams Pat. Crusher & Pulv. Co., Chicago, Ill.
- CULVERT PIPE.**
CAST IRON.
American Cast Iron Pipe Co., Birmingham, Ala.
Cast Iron Pipe & Publicity Bureau, New York, N. Y.
Glamorgan Pipe & Foundry Co., Lynchburg, Va.
U. S. Cast Iron Pipe & Fdy. Co., Burlington, N. J.
Wood & Co., R. D., Philadelphia, Pa.
- CULVERTS. (Corrugated Metal.)**
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Armo Iron Cal. & Flume Mfrs. Ass. Cincinnati, O.
Canton Culvert & Silo Co., The, Canton, O.
Tennessee Metal Culvert Co., Nashville, Tenn.
- CURB PROTECTOR. (Steel.)**
Trucon Steel Co., Youngstown, Ohio.
- CUTTER GRINDERS.**
Vitrified Wheel Co., Westfield, Mass.
- CUTTING MACHINES. (Metal.)**
Racine Tool & Machine Co., Racine, Wis.
- CUTS. (Half Tone, Line, etc.)**
Alpha Photo Engraving Co., Baltimore, Md.
- CYANIDE PLANT EQUIPMENT.**
Pacific Tank & Pipe Co., San Francisco, Cal.
- DERRICKS AND DERRICK FITTINGS.**
Allen Engineering Co., Philadelphia, Pa.
Byers Mach. Co., The, John F., Havana, O.
Buffalo Hoist & Derrick Co., New York, N. Y.
Hayward Co., The, New York, N. Y.
Inley Manufacturing Co., Indianapolis, Ind.
Monaghan Machine Co., Chicago, Ill.
- DESIGNERS AND ILLUSTRATORS. (Printed Matter.)**
Alpha Photo Engraving Co., Baltimore, Md.
- DESKS. (Factory and Public Schools.)**
American Seating Co., Chicago, Ill.
- DIAMONDS. (For Mechanical Purposes.)**
Desmond-Stephen Dresser Co., The, Urbana, O.
- DICTAPHONES.**
Columbia Graphophone Co., New York, N. Y.
- DITCHING MACHINERY.**
Ball Engine Co., (Erie Steam Shovel Co.) Erie, Pa.
Bay City Dredge Works, Bay City, Mich.
Buckeye Traction Ditcher Co., Findlay, Ohio.
Fairbanks Steam Shovel Co., Marion, Ohio.
Hayward Co., The, New York, N. Y.
Monaghan Machine Co., Chicago, Ill.
Osgood Co., The, Marion, Ohio.
Saunders Bros., Chicago, Ill.
- DOORS AND SHUTTERS. (Steel Rolling.)**
Detroit Steel Products Co., Detroit, Mich.
- DOORS. (Steel Rolling, etc.)**
Edwards Mfg. Co., Cincinnati, Ohio.
Kinner Mfg. Co., Columbus, Ohio.
David Lupton's Sons Co., Philadelphia, Pa.
- DOUBLE SEAMERS.**
Ama Machine Co., Max, Bridgeport, Conn.
- DRAFTSMEN'S SUPPLIES.**
Weber & Co., F., Philadelphia, Pa.
- DRAW SAWS. (Gasoline.)**
Chickasaw Copperage Co., Memphis, Tenn.
- DREDGING. (River, Harbor Improvement.)**
Atlantic, Gulf & Pacific Co., New York, N. Y.
- DRIERS.**
Bartlett & Snow Co., The, C. O., Cleveland, Ohio.
- DRILLING CONTRACTORS.**
Pennsylvania Drilling Co., Pittsburgh, Pa.
- DRILLS. (Electric.)**
Independent Pneumatic Tool Co., Chicago, Ill.
- PNEUMATIC.**
Independent Pneumatic Tool Co., Chicago, Ill.
- PROSPECTING.**
Ingersoll-Rand Co., New York, N. Y.
- ROCK AND MINING.**
Ingersoll-Rand Co., New York, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio.
Sullivan Mch. Co., Chicago, Ill.
- TRIST.**
McKenna Brass & Mfg. Co., Inc., Pittsburgh, Pa.
- DROP FORGINGS.**
American Spiral Pipe Works, Chicago, Ill.
Lakeland Forge Co., Erie, Pa.
- DROP FORGING MACHINERY.**
Bliss Co., E. W., Brooklyn, N. Y.
- DRY DOCKS. (Builders of.)**
American Bridge Co., New York, N. Y.
Foundation Co., The, New York, N. Y.
- DYERS.**
Christie Co., L. R., Pittsburgh, Pa.
- DYING APPARATUS.**
Carrier Engineering Corp., New York, N. Y.
- DYING MACHINERY.**
American Process Co., New York, N. Y.
Bailey-Lehby Co., The, Charleston, S. C.
Bartlett & Snow Co., The, C. O., Cleveland, Ohio.
Buffalo Forge Co., Buffalo, N. Y.
Burke Co., L. R., Pittsburgh, Pa.
Clarage Fan Co., Kalamazoo, Mich.
Hersey Mfg. Co., South Boston, Mass.
Ruggles-Coles Engr. Co., York, Pa.
- DRY KILNS.**
Buffalo Forge Co., Buffalo, N. Y.
Moore Dry Kiln Co., L., Jacksonville, Fla.
- DRY KILN EQUIPMENT.**
Moore Dry Kiln Co., L., Jacksonville, Fla.
- DUMPSWAITERS. (Hand Power.)**
McKenna Brass & Mfg. Co., Inc., Pittsburgh, Pa.
Spindel, J. G., Reading, Pa.
- DUMP WAGONS.**
Western Wheeled Scraper Co., Aurora, Ill.
- DUST-COLLECTING SYSTEMS.**
Buffalo Forge Co., Buffalo, N. Y.
Shureport Blow Pipe & S. I. Works, Ltd., Shureport, La.
- DUSTPROOFING. (Concrete.)**
Sonnenborn Sons, Inc., L., New York, N. Y.
- DYESTUFFS.**
Wolf & Co., Jacques, Passaic, N. J.
- DYNAMITE. (Industrial and Agricultural.)**
Aetna Explosives Co., Inc., New York, N. Y.
Atlas Powder Co., Wilmington, Del.
Du Pont de Nemours & Co., E. I., Wilm'ton, Del.
- DYNAMOS AND MOTORS.**
General Electric Co., Schenectady, N. Y.
Pan Electric Mfg. Co., St. Louis, Mo.
Wagner Elec. Mfg. Co., St. Louis, Mo.
Westhouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
Western Electric Co., New York, N. Y.
- ELECTORS. (Sewage.)**
Lunkenheimer Co., The, Cincinnati, Ohio.
- ELECTRIC FUSES. (Renewable and Non-Renewable.)**
Economy Fuse & Mfg. Co., Chicago, Ill.
- ELECTRIC LIGHTING FIXTURES.**
Mitchell, Vance Co., Inc., New York, N. Y.
- ELECTRIC MACHINERY. (Dynamometers, Generators, Motors, etc.)**
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Carroll Electric Co., Washington, D. C.
Doubleday-Hill Electric Co., Washington, D. C.
Electric Mch. & Equip. Co., Chicago, Ill.
General Electric Co., Schenectady, N. Y.
Gregory Electric Co., Chicago, Ill.
Klein & Co., Nathan, New York, N. Y.
Lincoln Electric Co., Cleveland, Ohio.
Monarch Electric Motor Co., New York, N. Y.
O'Brien Machinery Co., Philadelphia, Pa.
Pan Electric Mfg. Co., St. Louis, Mo.
Piedmont Electric Co., Asheville, N. C.
Sachsemauer & Co., Geo., Philadelphia, Pa.
Stewart, S. J., [Electric], New Orleans, La.
Wagner Elec. Mfg. Co., St. Louis, Mo.
Western Electric Co., New York, N. Y.
Westhouse Elec. & Mfg. Co., E. Pittsburgh, Pa.
Wilson Machinery Co., St. Louis, Mo.
- ELECTRICAL CONTRACTORS' INSTRUMENTS AND SUPPLIES.**
Booth Felt Co., Inc., Brooklyn, N. Y.
Carroll Electric Co., Washington, D. C.
Doubleday-Hill Electric Co., Washington, D. C.
General Electric Co., Schenectady, N. Y.
Piedmont Electric Co., Asheville, N. C.
Western Electrical Instrument Co., Newark, N. J.
- ELECTRICAL CONDUITS.**
National Metal Molding Co., Pittsburgh, Pa.
- ELECTRICAL MACHINERY REPAIRING.**
(Motors, Generators, etc.)
Charlotte Elec. Repair Co., Charlotte, N. C.
- ELECTRIC LIGHT PLANTS. (Portable.)**
Edison Storage Battery Co., Orange, N. J.
Lucy Mfg. Co., New York, N. Y.

In writing advertisers please mention Manufacturers Record. Whenever you need any product not advertised, please tell us. We will find it for you.

ELEVATORS.

AUTOMATIC.

Alvey Manufacturing Co., St. Louis, Mo.
Lamborn Co., The, Boston, Mass.
Mathews Gravity Carrier Co., Ellwood City, Pa.

ELECTRIC.

American Elev. & Mch. Co., Inc., Louisville, Ky.
K. C. Elevator Mfg. Co., Kansas City, Mo.
Moffatt Mch. Mfg. Co., Charlotte, N. C.
Otis Elevator Co., New York, N. Y.
Speidel, J. G., Reading, Pa.
Warsaw Elevator Co., Baltimore, Md.

HAND AND BELT POWER.

American Elev. & Mch. Co., Inc., Louisville, Ky.
K. C. Elevator Mfg. Co., Kansas City, Mo.
Moffatt Mch. Mfg. Co., Charlotte, N. C.
Speidel, J. G., Reading, Pa.

HYDRAULIC.

American Elev. & Mch. Co., Inc., Louisville, Ky.
K. C. Elevator Mfg. Co., Kansas City, Mo.
Moffatt Mch. Mfg. Co., Charlotte, N. C.
Otis Elevator Co., New York, N. Y.

PORTABLE FOR WAREHOUSES, ETC.

Economy Engineering Co., Chicago, Ill.

STEAM HYDRAULIC.

Otis Elevator Co., New York, N. Y.
Ridgway & Son Co., The, Chattanooga, Va.

ELEVATOR BUCKETS.

Alvey-Ferguson Co., Inc., Cincinnati, Ohio.
Caldwell & Son Co., H. W., Chicago, Ill.
Hendrick Mfg. Co., Carlisle, Pa.
Jeffrey Mfg. Co., Columbus, Ohio.
Link-Belt Co., Philadelphia, Pa.

ELEVATOR ENCLOSURES AND CABS.

Bolles Iron & Wire Works, J. E., Detroit, Mich.
Dexter Metal Mfg. Co., Camden, N. J.
Dow Wire & Iron Works, Inc., Louisville, Ky.
Dufur & Co., Baltimore, Md.
Dufur, Baggett & Co., Baltimore, Md.
Meyers Mfg. Co., The, Fred. J., Hamilton, Ohio.
Otis Elevator Co., New York, N. Y.

EMERY WHEEL STANDS.

Webster & Ferks Tool Co., The, Springfield, O.

ENAMELS.

Arco Co., Cleveland, Ohio.

ENGINEERS.

AGRICULTURAL.

Morse, Stanley F., New Orleans, La.

APPRASAL.

Allison, Walter A., Philadelphia, Pa.
American Appraisal Co., The, Milwaukee, Wis.
Black & Veatch, Kansas City, Mo.
Day & Zimmerman, Inc., Philadelphia, Pa.
Ford, Bacon & Davis, New York, N. Y.
Hall & Sons, B. M., Atlanta, Ga.
Kinneer & Co., W. S., New York, N. Y.
McKee & Co., Arthur G., Cleveland, Ohio.
Mead & Co., W. E., Pittsburgh, Pa.
Weller, Francis R., Washington, D. C.

BLAST FURNACES.

Fuller Engineering Co., Allentown, Pa.
Guernsey & Co., John B., Roanoke, Va.
McKee & Co., Arthur G., Cleveland, Ohio.
Smythe Co., The, S. R., Pittsburgh, Pa.

BRIDGE.

Concrete Steel Bridge Co., The, Clarksburg, W. Va.
Concrete-Steel Engr. Co., New York, N. Y.
Foundation Co., The, New York, N. Y.
Freeland-Klyce Engr. Co., Nashville, Tenn.
Gardner & Howe, Memphis, Tenn.
Hedrick & Hedrick, Kansas City, Mo.
Kinneer & Co., W. S., New York, N. Y.
Luten, Daniel B., Indianapolis, Ind.

CEMENT MILL.

Fuller Engineering Co., Allentown, Pa.
Mead & Co., Richard K., Baltimore, Md.

CHEMICAL.

Birmingham Mach. & Fdry. Co., Birmingham, Ala.
Dow & Smith, New York, N. Y.
Foundation Co., The, New York, N. Y.
Gilbert, N. A., Ashland, Ala.
Inst. of Industrial Research, Inc., Wash., D. C.
Little, Inc., Arthur D., Cambridge, Mass.
Mineral Corporation of America, Inc., New York.
Mead & Co., Richard K., Baltimore, Md.
Nelson, Jr., Wm. P., New Orleans, La.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Rickerts & Co., Inc., New York.

CIVIL.

Arnold Co., The, Chicago, Ill.
Brackett, F. Ernest, Cumberland, Md.
Clark & Krebs, Charleston, W. Va.
Concrete-Steel Engr. Co., New York, N. Y.
Foundation Co., The, New York, N. Y.
Gardner & Howe, Memphis, Tenn.
Hall & Sons, B. M., Atlanta, Ga.
Kinneer & Co., W. S., New York, N. Y.
Knowles, Morris, Pittsburgh, Pa.
Moore & Co., W. E., Pittsburgh, Pa.
Pride & Fairley, Blytheville, Ark.
White Companies, J. G., New York, N. Y.

DAMS.

Byllesby & Co., H. M., Chicago, Ill.
Foundation Co., The, New York, N. Y.
Gardner & Howe, Memphis, Tenn.
Hall & Sons, B. M., Atlanta, Ga.
Main, Chas. T., Boston, Mass.
Moore & Co., W. E., Pittsburgh, Pa.
Weller, Francis R., Washington, D. C.
White Companies, J. G., New York, N. Y.

DRAINAGE AND IRRIGATION.

Ford, Bacon & Davis, New York, N. Y.
Hall & Sons, B. M., Atlanta, Ga.
Knowles, Morris, Pittsburgh, Pa.
Pride & Fairley, Blytheville, Ark.
Spray Engr. Co., Boston, Mass.

EFFICIENCY.

Inst. of Industrial Research, Inc., Wash., D. C.
Little, Inc., Arthur D., Cambridge, Mass.
Moore & Co., W. E., Pittsburgh, Pa.
Nelson, Jr., Wm. P., New Orleans, La.

ELECTRICAL.

Arnold Co., The, Chicago, Ill.
Friend & Weber, New Orleans, La.
Lide, Martin J., Birmingham, Ala.
Mead & Co., W. E., Pittsburgh, Pa.
Moore & Co., W. E., Pittsburgh, Pa.
Stone & Webster, Boston, Mass.
Stuart, James & Cooke, New York, N. Y.
Tucker & Laxton, Charlotte, N. C.
Westhouse Church Kerr & Co., New York, N. Y.
White Companies, J. G., New York, N. Y.

ELECTRIC LIGHT AND POWER PLANTS.

Black & Veatch, Kansas City, Mo.
Byllesby & Co., H. M., Chicago, Ill.
Ford, Bacon & Davis, New York, N. Y.
Foundation Co., The, New York, N. Y.
Graves Engr. Co., Inc., New York, N. Y.
Moore & Co., W. E., Pittsburgh, Pa.
Schiffel Engr. Co., Philadelphia, Pa.
Stone & Webster, Boston, Mass.
Weller, Francis R., Washington, D. C.
Westhouse Church Kerr & Co., New York, N. Y.
White Companies, J. G., New York, N. Y.
White, Gilbert C., Charlotte, N. C.
Wiley & Wilson, Lynchburg, Va.

GAS.

Allison, Walter A., Philadelphia, Pa.
Byllesby & Co., H. M., Chicago, Ill.
Ford, Bacon & Davis, New York, N. Y.

GEOLOGICAL.

Clark & Krebs, Charleston, W. Va.
Davis, Geo. C., Philadelphia, Pa.
Freeland & Robertson, Richmond, Va.
Institute of Indust. Resch., Inc., Wash., D. C.
Mead & Co., Richard K., Baltimore, Md.

HYDRO-ELECTRIC.

Byllesby & Co., H. M., Chicago, Ill.
Foundation Co., The, New York, N. Y.
Kinneer & Co., W. S., New York, N. Y.
Knowles, Morris, Pittsburgh, Pa.
Main, Chas. T., Boston, Mass.
Moore & Co., W. E., Pittsburgh, Pa.
Schiffel Engineering Co., Philadelphia, Pa.
Smythe Co., The, S. R., Pittsburgh, Pa.
Weller, Francis R., Washington, D. C.
White Companies, J. G., New York, N. Y.
Wiley & Wilson, Lynchburg, Va.

INDUSTRIAL PLANT.

Austin Co., The, Cleveland, Ohio.
Brackett, F. Ernest, Cumberland, Md.
Brooks Eng. Co., C. L., Moultrie, Ga.
Concrete-Steel Bridge Co., The, Clarksburg, W. Va.
Day & Zimmerman, Inc., Philadelphia, Pa.
Dixie Engineering & Insulating Co., Atlanta, Ga.
Foundation Co., The, New York, N. Y.
Friend & Weber, New Orleans, La.
Fuller Engineering Co., Allentown, Pa.
Gardner & Howe, Memphis, Tenn.
Institute of Indust. Resch., Inc., Wash., D. C.
International Conveyor Corp., The, Wash., D. C.
Kinneer & Co., W. S., New York, N. Y.
Little, Inc., Arthur D., Cambridge, Mass.
McKee & Co., Arthur G., Cleveland, Ohio.
McKinney Const. Co., John T., Lynchburg, Va.
Main, Chas. T., Boston, Mass.
Mead & Co., Richard K., Baltimore, Md.
Moore & Co., W. E., Pittsburgh, Pa.
Nelson, Jr., Wm. P., New Orleans, La.
O'Brian, W. C., Memphis, Tenn.
Rust Engineering Co., The, Pittsburgh, Pa.
Schiffel Engineering Co., Philadelphia, Pa.
Shearer, C. E., Memphis, Tenn.
Stone & Webster, Boston, Mass.
Westhouse Church Kerr & Co., New York, N. Y.
White Companies, J. G., New York, N. Y.
Wiley & Wilson, Lynchburg, Va.

INSPECTIONS AND TESTS.

Dow & Smith, New York, N. Y.
Fort Worth Laboratories, Fort Worth, Tex.
Freeland & Robertson, Richmond, Va.
Institute of Indust. Resch., Inc., Wash., D. C.
Moore & Co., W. E., Pittsburgh, Pa.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Pride & Fairley, Blytheville, Ark.

LANDSCAPE.

Burhop, Geo., Washington, D. C.
Hoffman, Leon, Atlanta, Ga.

LEAVES.

Moore & Co., W. E., Pittsburgh, Pa.
Pride & Fairley, Blytheville, Ark.

LIGHTING.

Byllesby & Co., H. M., Chicago, Ill.
Ford, Bacon & Davis, New York, N. Y.
McCrory & Co., J. B., Atlanta, Ga.
Wiley & Wilson, Lynchburg, Va.

MECHANICAL.

Arnold Co., The, Chicago, Ill.
Dixie Engineering & Insulating Co., Atlanta, Ga.
Friend & Weber, New Orleans, La.
Fuller Engineering Co., Allentown, Pa.
Lide, Martin J., Birmingham, Ala.
Mead & Co., Richard K., Baltimore, Md.
Moore & Co., W. E., Pittsburgh, Pa.
Tucker & Laxton, Charlotte, N. C.
Wiley & Wilson, Lynchburg, Va.

METALLURGICAL.

Guernsey & Co., John B., Roanoke, Va.
Mead & Co., Richard K., Baltimore, Md.
Mineral Corporation of America, Inc., New York.
Rickerts & Co., Inc., New York.

MINING.

Brackett, F. Ernest, Cumberland, Md.
Clark & Krebs, Charleston, W. Va.
Guernsey & Co., John B., Roanoke, Va.
Hall & Sons, B. M., Atlanta, Ga.
International Conveyor Corp., The, Wash., D. C.
Johnston, Jr., W. Langstaff, Richmond, Va.
Mineral Corporation of America, Inc., New York.
Rickerts & Co., Inc., New York.

MUNICIPAL.

Clark & Krebs, Charleston, W. Va.
Dow & Smith, New York, N. Y.
Jennings-Lawrence Co., The, Columbus, Ohio.
Knowles, Morris, Pittsburgh, Pa.
McCrory & Co., J. B., Atlanta, Ga.
Moore & Co., W. E., Pittsburgh, Pa.
White, Gilbert C., Durham, N. C.

PACKING-HOUSE.

Brooks Engineering Co., C. L., Moultrie, Ga.
Dixie Engineering & Insulating Co., Atlanta, Ga.

PAVING AND ROADS.

Dow & Smith, New York, N. Y.
Freeland-Klyce Engr. Co., Nashville, Tenn.
Institute of Indust. Resch., Inc., Wash., D. C.
Jennings-Lawrence Co., The, Columbus, Ohio.
McKinney Const. Co., John T., Lynchburg, Va.
Pride & Fairley, Blytheville, Ark.
White, Gilbert C., Durham, N. C.

PUBLIC SERVICE PROPERTIES.

Byllesby & Co., H. M., Chicago, Ill.
Day & Zimmerman, Inc., Philadelphia, Pa.
Ford, Bacon & Davis, New York, N. Y.
Kinneer & Co., W. S., New York, N. Y.
Moore & Co., W. E., Pittsburgh, Pa.
Schiffel Engineering Co., Philadelphia, Pa.
Stone & Webster, Boston, Mass.
Weller, Francis R., Washington, D. C.
Westhouse Church Kerr & Co., New York, N. Y.
White Companies, J. G., New York, N. Y.

RAILROAD.

Brackett, F. Ernest, Cumberland, Md.
Clark & Krebs, Charleston, W. Va.
Hunt & Co., Robert W., Chicago, Ill.
International Conveyor Corp., The, Wash., D. C.
Kinneer & Co., W. S., New York, N. Y.

REFRIGERATING.

Brooks Engineering Co., C. L., Moultrie, Ga.
Dixie Engineering & Insulating Co., Atlanta, Ga.

REINFORCED CONCRETE. (Bridges, Buildings, etc.)

Concrete-Steel Engr. Co., New York, N. Y.
Foundation Co., The, New York, N. Y.
Freeland-Klyce Engr. Co., Nashville, Tenn.
Gardner & Howe, Memphis, Tenn.
Kinneer & Co., W. S., New York, N. Y.
Luten, Daniel B., Indianapolis, Ind.
McKinney Const. Co., John T., Lynchburg, Va.
Mead & Co., Richard K., Baltimore, Md.
Rust Engineering Co., The, Pittsburgh, Pa.
Savannah Engr. & Const. Co., Savannah, Ga.
Tucker & Laxton, Charlotte, N. C.
White Companies, J. G., New York, N. Y.

SEWERAGE AND WATER-WORKS.

Black & Veatch, Kansas City, Mo.
Brackett, F. Ernest, Cumberland, Md.
Ford, Bacon & Davis, New York, N. Y.
Hall & Sons, B. M., Atlanta, Ga.
Jennings-Lawrence Co., The, Columbus, Ohio.
Knowles, Morris, Pittsburgh, Pa.

McKinney Const. Co., John T., Lynchburg, Va.
Moore & Co., W. E., Pittsburgh, Pa.
White Companies, J. G., New York, N. Y.
Wiley & Wilson, Lynchburg, Va.

STEEL WORK AND ROLLING MILLS.

Smythe Co., The, S. R., Pittsburgh, Pa.
STRUCTURAL STEEL.
Freeland-Klyce Engr. Co., Nashville, Tenn.
Hedrick & Hedrick, Kansas City, Mo.
Shearer, C. E., Memphis, Tenn.

ENGINES.

COMPRESSED AIR.
Duke Engine Co., Grand Haven, Mich.
GAS AND GASOLINE.
American-Blakeslee Mfg. Co., Birmingham, Ala.
Cooper Co., C. & G., Mt. Vernon, Ohio.
De La Vergne Machine Co., New York, N. Y.
Foss Gas Engine Co., Springfield, Ohio.
Mits. Corp., August, New York, N. Y.
National Transit Pump & Mch. Co., Oil City, Pa.
Novo Engine Co., Lansing, Mich.

KEROSENE.

American-Blakeslee Mfg. Co., Birmingham, Ala.
Novo Engine Co., Lansing, Mich.

OIL.

Baltimore Oil Engine Co., Baltimore, Md.
Buckeye Machine Co., The, Lima, Ohio.
Chicago Pneumatic Tool Co., Chicago, Ill.
De La Vergne Machine Co., New York, N. Y.
Foss Gas Engine Co., Springfield, Ohio.
Mits. Corp., August, New York, N. Y.
Muncie Oil Engine Co., Muncie, Ind.
National Transit Pump & Mch. Co., Oil City, Pa.
Power Mfg. Co., The, Marion, Ohio.
St. Mary's Oil Engine Co., St. Charles, Mo.
Watlington Pump & Mch. Corp., New York, N. Y.

STEAM.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Ames Iron Works, Oswego, N. Y.
Ball Engine Co., Erie, Pa.
Buffalo Forge Co., Buffalo, N. Y.
Clyff Bros. Co., Olean, N. Y.
Cooper Co., C. & G., Mt. Vernon, Ohio.
Erie Pump & Engine Co., Medina, N. Y.
Harris Bros. Co., Chicago, Ill.
Hardie-Tynes Mfg. Co., Birmingham, Ala.
Houston, Stanwood & Gamble Co., Cincinnati, O.
Lefell & Co., James, Springfield, Ohio.
Lombard Iron Works, Augusta, Ga.
Meeklenburg Iron Works, Charlotte, N. C.
Morris Machine Works, Baldwinville, N. Y.
Murray Iron Works Co., Burlington, Iowa.
National Transit Pump & Mch. Co., Oil City, Pa.
Schiffel Iron Works, Macon, Ga.
Vilter Mfg. Co., Milwaukee, Wis.

UNIFLOW.

Ames Iron Works, Oswego, N. Y.

ENVELOPES.

Young & Selden Co., Baltimore, Md.

EVAPORATORS. (Chemical.)

Birmingham Mch. & Fdry. Co., Birmingham, Ala.

EXCAVATING MACHINERY.

Ball Engine Co. (Erie Steam Shovel Co.), Erie, Pa.
Bay City Dredge Works, Bay City, Mich.
Buckeye Traction Ditcher Co., Findlay, Ohio.
Byers Machine Co., The, John F., Ravenna, O.
Fairbanks Steam Shovel Co., Marion, Ohio.
Harvard Co., The, New York, N. Y.
Keystone Driller Co., Beaver Falls, Pa.
Lidgerwood Mfg. Co., New York, N. Y.
Monaghan Machine Co., Chicago, Ill.
Morris Machine Works, Baldwinville, N. Y.
Osgood Co., The, Marion, Ohio.
Owen Bucket Co., Cleveland, Ohio.
Sauermaier Bros., Chicago, Ill.

EXCAVATORS.

CABLEWAY DRAGLINE.
Ball Engine Co. (Erie Steam Shovel Co.), Erie, Pa.
Sauermaier Bros., Chicago, Ill.

TRENCH.

Ball Engine Co. (Erie Steam Shovel Co.), Erie, Pa.
Bay City Dredge Works, Bay City, Mich.
Buckeye Traction Ditcher Co., Findlay, Ohio.
Fairbanks Steam Shovel Co., Marion, Ohio.
Harvard Co., The, New York, N. Y.
Keystone Driller Co., Beaver Falls, Pa.
Monaghan Machine Co., Chicago, Ill.

EXCELSIOR MACHINERY.

Kline, Lewis T., Alpena, Mich.

EXHAUST FANS. (Acid Proof.)

Durion Casting Co., Dayton, Ohio.

EXHAUST HEADS.

Abendroth & Root Mfg. Co., Newburgh, N. Y.
American Spiral Pipe Works, Chicago, Ill.

EXPANDED METAL LATH REINFORCING.

Consolidated Expanded Metal Co., Braddock, Pa.

EXPANSION JOINTS. (Street and Road.)

Northwestern Expanded Metal Co., Chicago, Ill.

EXPERT. (Agricultural.)

Morse, Stanley F., New Orleans, La.

EXPLOSIVES.

Aetna Explosives Co., Inc., New York, N. Y.
Atlas Powder Co., Wilmington, Del.
Du Pont de Nemours & Co., E. I., Wilton, Del.

EXPORTERS.

American Steel Export Co., New York, N. Y.
Burgess & Co., D. H., Petersburg, Va.

FACTORY SITES. (Town and Railroad.) [See Industrial, Agricultural and Commercial Opportunities.]

Martin & Co., Wm., Baltimore, Md.

FEED-WATER HEATERS AND PURIFIERS.

American Water Softener Co., Philadelphia, Pa.
Murray Iron Works Co., Burlington, Iowa.
Worthington Pump & Mch. Corp., New York, N. Y.

FELT. (Building Sheathing.)

Barrett Co., New York, N. Y.

FELT PARTS. (Mechanical Purposes.)

Booth Felt Co., Inc., Brooklyn, N. Y.

FENCING.

CONCRETE, GALVANIZED, CONCRETE.
Amer. Sheet & Tin Plate Co., Pittsburgh, Pa.

WOVEN WIRE FIELD.

American Steel & Wire Co., Chicago, Ill.
Anchor Post Iron Works, New York, N. Y.
Cyclone Fence Co., Wankegan, Ill.
Gulf States Steel Co., Birmingham, Ala.
Page Steel & Wire Co., Adrian, Mich.
Wright Wire Co., The, Worcester, Mass.

FENCING, ENTRANCE GATES. (Iron, Steel, Wire.)

American Steel & Wire Co., Chicago, Ill.
Anchor Post Iron Works, New York, N. Y.
Bolles Iron & Wire Works, J. E., Detroit, Mich.
Cyclone Fence Co., Wankegan, Ill.
Dow Wire & Iron Works, Inc., Louisville, Ky.
Dufur & Co., Baltimore, Md.
New Jersey Wire Cloth Co., Trenton, N. J.
Page Steel & Wire Co., Adrian, Mich.
Van Dorn Iron Works Co., The, Cleveland, Ohio.

FERTILIZER MACHINERY.

K-B Pulverizer Co., Inc., New York, N. Y.
Raymond Bros. Imp. Pulverizer Co., Chicago, Ill.
Vaik & Murdoch Co., Charleston, S. C.

FILES.

Barrett Co., G. & H., Philadelphia, Pa.
Nicholson File Co., Providence, R. I.

FILTERS. (For Domestic and Ind. Purposes.)
American Water Softener Co., Philadelphia, Pa.
The Electric Ozone Sterilizer Co., Chicago, Ill.
International Filter Co., Chicago, Ill.
Pittsburgh Filter Mfg. Co., Pittsburgh, Pa.
Richmond Water Softener Co., Richmond, Ind.
Roberts Filter Mfg. Co., Darby, Pa.

FINANCING.

Electric Bond & Share Co., New York, N. Y.

FIRE CLAY FLUE LININGS.

Stevens Bros. & Co., Stevens Pottery, Ga.

FIRE ESCAPES.

Bolles Iron & Wire Works, J. E., Detroit, Mich.
Chattanooga Rfr. & Fdy. Co., Chattanooga, Tenn.
Chesapeake Iron Works, Baltimore, Md.

FIREPLACES. (Brick and Tile.)

Hood Brick Co., B. Midlin, Atlanta, Ga.

FIREPROOF BUILDING MATERIAL.

Asphum Concrete, Pittsburgh, Pa.
Bannon Pipe Co., F., Louisville, Ky.
Berger Mfg. Co., Canton, Ohio.
General Fireproofing Co., Youngstown, Ohio.

FIREPROOF DOORS AND SHUTTERS.

Klunzer Mfg. Co., Columbus, Ohio.

FIREPROOFING. (Brick and Tile.)

Hood Brick Co., B. Midlin, Atlanta, Ga.

FIREPROOF MATERIAL AND CONSTRUCTION.

Detroit Steel Products Co., Detroit, Mich.

FIRE SPRINKLING SYSTEMS.

Globe Automatic Sprinkler Co., Philadelphia, Pa.

FITTINGS. (Malleable and Cast.)

Ohio Pipe Co., Findlay, Ohio.

FITTINGS. (Wire Rope.)

Waterbury Co., New York, N. Y.

FLAG POLES. (Iron and Steel.)

National Tube Co., Pittsburgh, Pa.

FLANGES. (Iron and Steel.)

American Cast Iron Pipe Co., Birmingham, Ala.
American Spiral Pipe Works, Chicago, Ill.
Bart Mfg. Co., E. M., Providence, R. I.
Glamorgan Pipe & Fdry Co., Lynchburg, Va.
National Cast Iron Pipe Co., Birmingham, Ala.
T. S. Cast Iron Pipe Fdry. Co., Burlington, N. C.
Wood Co., B. D., Philadelphia, Pa.

FLOORING.

COMPOSITION.
Acme Asbestos Covering & Sup. Co., Chicago, Ill.
Johns-Manville Co., H. W., New York, N. Y.

CREOSOTED BLOCKS.

Republic Creosoting Co., Indianapolis, Ind.

173

Partridge Machinery Co., Philadelphia, Pa.
 Barlidge, Arthur S., St. Louis, Mo.
 Penn Supply & Equipment Co., Philadelphia, Pa.
 Pfannmueller Engineering Co., Chicago, Ill.
 Pipe & Contractors' Supply Co., New York, N. Y.
 Peabody Melbury & Phipps Co., Pittsburgh, Pa.
 Potts & Co., Houtz, Philadelphia, Pa.
 Power Machinery Exchange, Jersey City, N. J.
 Prentiss & Co., Inc., Henry, New York, N. Y.
 Queen City Iron & Metal Co., Charlotte, N. C.
 Randle Machinery Co., Cincinnati, Ohio.
 Reliance Equipment Co., Mobile, Ala.
 Ross Power Equipment Co., Indianapolis, Ind.
 Saechuennaler & Co., Geo., Philadelphia, Pa.
 Samler Bros., Inc., Baltimore, Md.
 Sealy-Jones & Co., Chicago, Ill.
 Seeger-Walraven Co., Atlanta, Ga.
 Seyfer & Sons, Inc., Philadelphia, Pa.
 Shaw, Willis, Chicago, Ill.
 Simmons Briggs Co., Memphis, Tenn.
 Sonken Galambis Iron & Metal Co., Kan. City, Mo.
 South Side Fdry. & Mch. Wks., Charleston, W. Va.
 Southern Iron & Metal Co., Jacksonville, Fla.
 Southern Machinery Co., Knoxville, Tenn.
 Southern States Equip. Co., New Orleans, La.
 Sterling Iron & Steel Co., Philadelphia, Pa.
 Stewart, S. J. (Electric), New Orleans, La.
 Stewart, Paul, Cincinnati, Ohio.
 Straley, Dan'l B., Crown Point, Ind.
 Sun Forge Machinery Co., Philadelphia, Pa.
 Tampa Machinery Exchange, Tampa, Fla.
 Terwilliger Equipment Co., Philadelphia, Pa.
 Tilley Co., Inc., J. G., Bristol, Va.
 Toomer, Frank, Inc., Philadelphia, Pa.
 Tuerbet, A. C., Chicago, Ill.
 United Machine Works, New York, N. Y.
 Wayne Supply Co., Roy C., Louisville, Ky.
 Wilson Mchry. Co., St. Louis, Mo.
 Wood & Co., A. N., Inc., Philadelphia, Pa.
 Zelnicke Supply Co., Walter A., St. Louis, Mo.

MACHINE TOOLS.
 Houston, Stanwood & Gamble Co., The, Okla., O.
 Niles-Bement-Pond Co., New York, N. Y.

MAGNETIC SEPARATORS.
 Buchanan Co., Inc., C. G., New York, N. Y.

MAIL CHUTES.
 Cutler Mail Chute Co., Rochester, N. Y.

MANGANES.
 Southern Minerals Corp., Boston, Mass.

MANTELS. (Period Designs in Composition.)
 Mitchell, Vance Co., Inc., New York, N. Y.

MECHANICAL DRAFT.
 Buffalo Forge Co., Buffalo, N. Y.
 Clamage Fan Co., Kalamazoo, Mich.

METALINE.
 Metaline Co., Long Island City, N. Y.

METAL CUTTING MACHINES.
 Atkins & Co., Inc., E. F., Indianapolis, Ind.
 Racine Tool & Machine Co., Racine, Wis.

METAL. (For Tanks, Culverts, Roofing, etc.)
 Trumuller Steel Co., Warren, Ohio.
 Whitaker-Glessner Co., Wheeling, W. Va.

METAL-WORKING MACHINERY.
 Bliss Co., E. W., Brooklyn, N. Y.
 Niles-Bement-Pond Co., New York, N. Y.

MICROMETERS, CALIPERS, ETC.
 Starrett Co., L. S., Athol, Mass.

MILK FILTERS. (Liquor, Milk, etc.)
 International Filter Co., Chicago, Ill.

MILL MACHINERY AND SUPPLIES.
 Baley-Lebby Co., Inc., Charleston, S. C.
 Booth Felt Co., Brooklyn, N. Y.
 Empire Mill Supply Co., Norfolk, Va.
 Feltz Mfg. & Supply Co., Hagerstown, Md.
 Lombard Iron Works, Augusta, Ga.
 Mecklenburg Iron Works, Charlotte, N. C.
 New Bern Iron Works & Steel Co., Inc., New Bern, N. C.
 Hart Co., F., Baltimore, Md.
 Stratton & Bragg Co., Petersburg, Va.
 Wolf Co., Chambersburg, Pa.

MILL SUPPLIES.
 Kries & Sons Co., Henry A., Baltimore, Md.

MILL TIMBER.
 Great Southern Lumber Co., Bogalusa, La.
 Moss-Downer Lumber Co., Valdosta, Ga.

MILL WORK. (Lumber, All Kinds.)
 Bacon & Sons, A. S., Savannah, Ga.

MINE LAMPS. (Electric.)
 Edison Storage Battery Co., Orange, N. J.

MINING MACHINERY.
 Jeffrey Mfg. Co., Columbus, Ohio.
 McLannan-Stevens Mch. Co., Hildsburg, Pa.
 Mecklenburg Iron Works, Charlotte, N. C.
 The New Automatic Shovel Co., Lorain, Ohio.
 Wellman-Leaver-Morgan Co., Tice, Cleveland, O.

MIXERS. (Concrete.)
 American Cement Mch. Co., Inc., Keokuk, Iowa.
 Eureka Machine Co., Lansing, Mich.
 Insley Manufacturing Co., Indianapolis, Ind.
 Jaeger Machine Co., Columbus, Ohio.
 Koehring Machine Co., Milwaukee, Wis.
 Northwestern Steel Iron Wks., Eau Claire, Wis.
 Standard Scale & Supply Co., Pittsburgh, Pa.

Mot.
 Koehring Machine Co., Milwaukee, Wis.

MORTAR COLORES.
 Chattanooga Paint Co., Chattanooga, Tenn.

MOTOR TRUCKS. (Gasoline.)
 Garford Motor Truck Co., Lima, Ohio.
 General Motors Truck Co., Pontiac, Mich.
 International Motor Co., New York, N. Y.
 Republic Motor Truck Co., Inc., Alma, Mich.
 Sterling Motor Truck Co., New York, N. Y.
 U. S. Motor Truck Co., The, Cincinnati, Ohio.

MUSIC WIRE.
 Aborn Steel Co., New York, N. Y.
 American Steel & Wire Co., Chicago, Ill.
 Waterbury Co., The, New York, N. Y.

NAIL MACHINERY. (Wire.)
 Sleeper & Hartley, Inc., Worcester, Mass.

NAILS.
 Curr.
 La Belle Iron Works, Steubenville, Ohio.
 WIRE, ALL KINDS.
 Atlantic Steel Co., Atlanta, Ga.
 Gulf States Steel Co., Birmingham, Ala.

NAILS AND SPIKES.
 Bethlehem Steel Co., South Bethlehem, Pa.
 La Belle Iron Works, Steubenville, Ohio.
 Republic Steel Co., Youngstown, Ohio.
 Stimpson Co., Edwin B., New York, N. Y.
 Youngstown Sheet & Tube Co., Youngstown, O.

NAME PLATES. (For Highways.)
 Union Iron Products Co., East Chicago, Ind.

NICKEL. (Boron-Alloying.) [Shot.]
 American Boron Products Co., Reading, Pa.

NOZZLES. (Aerating Sprinkler, etc.)
 Spray Engineering Co., Boston, Mass.

NUTS.
 HOT PRESSED.
 St. Louis Screw Co., St. Louis, Mo.
 SCREW FINISHED.
 St. Louis Screw Co., St. Louis, Mo.

OIL-BURNING EQUIPMENT.
 Lockett & Co., Ltd., A. M., New Orleans, La.

OIL CANS.
 Wall Mfg. Supply Co., P., Allegheny, Pa.

OIL MILL MACHINERY.
 Bursas Engineering Co., Atlanta, Ga.

XUM

OILS. (Lubricating, etc.)

Albany Lubricating Co., New York, N. Y.
Borne, Scrymgeour & Co., New York, N. Y.
Coudon Co., Tulsa, Okla.
Gulf Refining Co., Pittsburgh, Pa.
Robinson & Son Co., Wm. C., Baltimore, Md.
Standard Oil Co. of Louisiana, Baton Rouge, La.
Swan & Finch Co., New York, N. Y.
Texas Co., The, New York, N. Y.

OIL WELL MACHINERY.

Cook, A. D., Lawrenceburg, Ind.
Keystone Pipe & Supply Co., Butler, Pa.
Lucy Mfg. Co., New York, N. Y.
Williams Bros., Ithaca, N. Y.

ORE WASHING MACHINERY.

Davis Foundry & Machine Works, Rome, Ga.
McLanahan Stone Mch. Co., Hollidaysburg, Pa.

ORNAMENTAL IRON WORKS.

Bolles Iron & Wire Wks., J. E., Detroit, Mich.
Chattanooga Rfg. & Fdy. Co., Chattanooga, Tenn.
Dexter Metal Mfg. Co., Camden, N. J.
Dow Wire & Iron Works, Inc., Louisville, Ky.
Newman Mfg. Co., The, Cincinnati, Ohio.
Page Steel & Wire Co., Adrian, Mich.
Rounkoke Iron & Bridge Wks., Inc., Rounkoke, Va.
Snead Architectural Iron Wks., Louisville, Ky.

OXYGEN.

Linde Air Products Co., The, New York, N. Y.

OXY-ACETYLENE WELDING AND CUTTING OUTFIT AND SUPPLIES.

Imperial Brass Mfg. Co., Chicago, Ill.

PACKING HOUSE APPARATUS.

Ottensmeyer Bros., Baltimore, Md.

PACKING. (Asbestos, Metallic, Rubber, Leather, etc.)

Booth Felt Co., Inc., Brooklyn, N. Y.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Dominion Asbestos & Rub. Corp., New York, N. Y.
Goodrich Co., B. F., Akron, Ohio.
Goodyear Tire & Rubber Co., Akron, Ohio.
Graton & Knight Mfg. Co., Worcester, Mass.
Johns-Manville Co., H. W., New York, N. Y.
Power Specialty Co., New York, N. Y.

PAINT.

METAL SURFACES.

Dixon Crucible Co., Joseph, Jersey City, N. J.
Du Pont de Nemours & Co., E. I., Wilmington, Del.
Longman & Martinez, New York, N. Y.
Toch Bros., New York, N. Y.

PRESERVATIVE.

Arco Co., Cleveland, Ohio.
Du Pont de Nemours & Co., E. I., Wilmington, Del.
Longman & Martinez, New York, N. Y.
Toch Bros., New York, N. Y.

ROOFING, BUILDING, ETC.

Chattanooga Paint Co., Chattanooga, Tenn.
Longman & Martinez, New York, N. Y.

WATER. (For Interiors.)

Arco Co., Cleveland, Ohio.
Longman & Martinez, New York, N. Y.

PARTITIONS. (Metal, Wooden, Rolling.)

David Lupton's Sons Co., Philadelphia, Pa.
Detroit Steel Products Co., Detroit, Mich.

PATENT ATTORNEYS.

Brown, Eugene O., Washington, D. C.
Chandee & Chandee, Washington, D. C.
Evans & Co., Victor J., Washington, D. C.
Whitaker, Norman T., Washington, D. C.

PAVING BLOCKS. (Wood.)

Crescent Materials Co., Inc., New Orleans, La.
Republic Creosoting Co., Indianapolis, Ind.
Southern Creosoting Co., Ltd., Slidell, La.
Southern Paving Const. Co., Chattanooga, Tenn.
Southern Wood Preserving Co., Atlanta, Ga.

PAVING BRICK.

Standard Brick Co., Macon, Ga.

PAVING MIXERS. (Concrete.)

American Cement Mch. Co., Inc., Keokuk, Iowa.
Jaeger Machine Co., The, Columbus, Ohio.
Standard Scale & Supply Co., Pittsburgh, Pa.

PAVING PLANTS. (Asphalt.)

Cumner & Son Co., P. D., Cleveland, Ohio.

PERFORATED METAL.

Caldwell & Son Co., H. W., Chicago, Ill.
Erdle Perforating Co., Rochester, N. Y.
Harrington & King Perforating Co., Chicago, Ill.
Hendricks Mfg. Co., The, Carbondale, Pa.
Manhattan Perforated Metal Co., New York, N. Y.
Mundt & Sons, Charles, Jersey City, N. J.

PETROLEUM REFINERS.

Coudon Co., Tulsa, Okla.
Gulf Refining Co., Pittsburgh, Pa.
Standard Oil Co. of Louisiana, Baton Rouge, La.
Texas Co., The, New York, N. Y.

PHOSPHATE MACHINERY.

American Process Co., New York, N. Y.
Bailey-Libby Co., The, Charleston, S. C.
K-B Pulverizer Co., New York, N. Y.
McLanahan Stone Mch. Co., Hollidaysburg, Pa.
Valk & Murdoch Co., Charleston, S. C.

PIG IRON.

Alabama Co., The, Birmingham, Ala.
Bethlehem Steel Co., South Bethlehem, Pa.
Brier Hill Steel Co., Youngstown, Ohio.
Hammond-Byrd Co., The, Birmingham, Ala.
La Belle Iron Works, Steubenville, Ohio.
Republic Iron & Steel Co., Youngstown, Ohio.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.

PILING. (Creosoted.)

American Creosote Works, New Orleans, La.
Crescent Materials Co., Inc., New Orleans, La.
Southern Creosoting Co., Ltd., Slidell, La.
Southern Paving Const. Co., Chattanooga, Tenn.

PILLW BLOCKS.

Caldwell Co., W. E., Louisville, Ky.
Goldens' Foundry & Machine Co., Columbus, Ga.
Medart Patent Pulley Co., St. Louis, Mo.

SHAFT.

Bond Fdy. & Mch. Co., Manheim, Pa.

PINE. (Southern Long Leaf.)

Great Southern Lumber Co., Bogalusa, La.

PIPE.

La Belle Iron Works, Steubenville, Ohio.
National Tube Co., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, Ohio.

CAST IRON.

American Cast Iron Pipe Co., Birmingham, Ala.
Cast Iron Pipe & Publicity Bureau, New York, N. Y.
Central Foundry Co., New York, N. Y.
Glamorgan Pipe & Foundry Co., Llantrisant, Va.
National Cast Iron Pipe Co., Birmingham, Ala.
U. S. Cast Iron Pipe & Fdy. Co., Burlington, N. J.
Wood & Co., B. D., Philadelphia, Pa.

COIL.

Frick Co., Waynesboro, Pa.

RIVETS.

Abendroth & Root Mfg. Co., Newburgh, N. Y.
New York & S. Co., Inc., New Bern, N. C.

SECOND-HAND.

Cassel & Co., B., Chattanooga, Tenn.
Griffith, James F., Philadelphia, Pa.
Keveton Pipe & Supply Co., Butler, Pa.
Marine Metal & Supply Co., New York, N. Y.
Ohio Pipe Co., Findlay, Ohio.

Peerless Iron Pipe Etc., Inc., New York, N. Y.
Pipe & Contractors' Supply Co., New York, N. Y.

SPIRAL RIVETS.

Abendroth & Root Mfg. Co., Newburgh, N. Y.
American Spiral Pipe Works, Chicago, Ill.

SPIRAL STEEL.

Standard Spiral Pipe Works, Chicago, Ill.

STEEL.

National Tube Co., Pittsburgh, Pa.
La Belle Iron Works, Steubenville, Ohio.
Republic Iron & Steel Co., Youngstown, Ohio.
Youngstown Sheet & Tube Co., Youngstown, Ohio

WOOD.

Michigan Pipe Co., Bay City, Mich.
Pacific Tank & Pipe Co., San Francisco, Cal.
Standard Wood Pipe Co., Williamsport, Pa.
Wyckoff & Son Co., A., Elmira, N. Y.

WROUGHT IRON.

Youngstown Sheet & Tube Co., Youngstown, Ohio

PIPES & FITTINGS. (Acid Proof.)

Duriron Casting Co., Dayton, Ohio.

PIPE COVERINGS.

Magnesia Association of America, Phila., Pa.

PIPE FITTINGS.

American Cast Iron Pipe Co., Birmingham, Ala.
Crane Co., Chicago, Ill.
Griffith, James F., Philadelphia, Pa.
Kries & Sons Co., Henry A., Baltimore, Md.
Lunkensmeyer Co., The, Cincinnati, Ohio.
National Cast Iron Pipe Co., Birmingham, Ala.

PIPE UNIONS AND JOINTS.

Dart Mfg. Co., E. M., Providence, R. I.

PISTON RINGS. (Compressors, Engines, etc.)

The Evertight Piston Ring Co., St. Louis, Mo.

PITCH.

Barrett Co., New York, N. Y.

PLATES.

STEEL.

Allegheny Steel Co., Pittsburgh, Pa.
Cincinnati Iron & Steel Co., Cincinnati, Ohio.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
National Steel & Steel Co., Alan, Philadelphia, Pa.

POLES.

Northrup & Sons, C. E., Galatin, Tenn.

POLES. (Creosoted.)

American Creosote Works, New Orleans, La.
Crescent Materials Co., Inc., New Orleans, La.
Southern Creosoting Co., Ltd., Slidell, La.
Southern Paving Const. Co., Chattanooga, Tenn.
Southern Wood Preserving Co., Atlanta, Ga.

POLISHING MACHINERY. (Wheels, Blocks.)

Vitrited Wheel Co., Westfield, Mass.

POSTS. (Cast Iron.) [Railway and Highway.]

Northrup & Sons, C. E., Galatin, Tenn.
U. S. Cast Iron Pipe & Fdy. Co., Burlington, N. J.

POST CAPS.

Van Dorn Iron Works Co., The, Cleveland, Ohio.

POWER TRANSMISSION MACHINERY.

Alvey Manufacturing Co., St. Louis, Mo.
Alvey-Ferguson Co., Inc., Cincinnati, Ohio.
Bailey-Libby Co., Charleston, S. C.
Bond Fdy. & Mch. Co., Manheim, Pa.
Caldwell & Son Co., H. W., Chicago, Ill.
Caldwell Co., W. E., Louisville, Ky.
Cresson-Morris Co., Philadelphia, Pa.
Dodge Sales & Engr. Co., Mishawaka, Ind.
Goldens' Foundry & Machine Co., Columbus, Ga.
Jeffrey Mfg. Co., Columbus, Ohio.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Lansdown Co., The, Boston, Mass.
Link-Belt Co., Philadelphia, Pa.
Medart Patent Pulley Co., St. Louis, Mo.
Morse Chain Co., Ithaca, N. Y.
Schofield Iron Works, Macon, Ga.
Smith-Courtney Co., Richmond, Va.
Standard Pressed Steel Co., Philadelphia, Pa.
The American Pulley Co., Philadelphia, Pa.
Wolf Co., The, Chambersburg, Pa.
Wood's Sons, T. B., Chambersburg, Pa.

PRESERVATIVE. (Canvas.)

Robeson Preserve Products Co., Port Huron, Mich.

PRESSES.

BALING, COTTONSEED OIL, ETC., HYDRAULIC AND POWER.
Anderson Co., The, V. D., Cleveland, Ohio.
Bauer Bros. Co., The, Springfield, Ohio.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Cardwell Machine Co., Richmond, Va.
Continental Gln Co., Birmingham, Ala.
French Oil Mch. Co., The, Piqua, Ohio.
Murray Co., The, Atlanta, Ga.
Ripley Foundry & Machine Co., Ripley, Ohio.
Saco-Lowell Shops, Boston, Mass.

METAL STAMPING.

Stimpson Co., Edwin B., Brooklyn, N. Y.

STAMPING.

Ams Machine Co., Max, Bridgeport, Conn.
Bliss Co., E. W., Brooklyn, N. Y.

PRINTERS. (Book, Catalog, Job, etc.)

Fleet & Son, Birmingham, Ala.
Fleet-McGinley Co., Baltimore, Md.

PRISON WORK.

Van Dorn Iron Works, The, Cleveland, Ohio.

PULLEYS.

FRICTION CLUTCH.
Caldwell & Son Co., H. W., Chicago, Ill.
Caldwell Co., W. E., Louisville, Ky.
Cresson-Morris Co., Philadelphia, Pa.
Dodge Sales & Engr. Co., Mishawaka, Ind.
Medart Patent Pulley Co., St. Louis, Mo.
Wood's Sons Co., T. B., Chambersburg, Pa.

STEEL RIM.

Medart Patent Pulley Co., St. Louis, Mo.
The American Pulley Co., Philadelphia, Pa.

WOOD SPLIT.

Caldwell & Son Co., H. W., Chicago, Ill.
Medart Patent Pulley Co., St. Louis, Mo.

PULLEYS, SHAFTING AND HANGERS.

Bond Fdy. & Mch. Co., Manheim, Pa.
Caldwell & Son Co., H. W., Chicago, Ill.
Conway & Co., Cincinnati, Ohio.
Cresson-Morris Co., Philadelphia, Pa.
Dodge Sales & Engr. Co., Mishawaka, Ind.
Goldens' Foundry & Machine Co., Columbus, Ga.
Jeffrey Mfg. Co., Columbus, Ohio.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Medart Patent Pulley Co., St. Louis, Mo.
Standard Pressed Steel Co., Philadelphia, Pa.
The American Pulley Co., Philadelphia, Pa.
Wood's Sons Co., T. B., Chambersburg, Pa.

PULVERIZERS.

American Pulverizer Co., St. Louis, Mo.
Austin Mfg. Co., Chicago, Ill.
Excelsior Tool & Mch. Co., East St. Louis, Mo.
Fuller-Lehigh Co., Fullerton, Pa.
Gruendler Pat. Crusher & Pulv. Co., St. Louis, Mo.
Jeffrey Mfg. Co., Columbus, Ohio.
K-B Pulverizer Co., Inc., New York, N. Y.
McLanahan Stone Mch. Co., Hollidaysburg, Pa.
Raymond Bros. Impact Pulv. Co., Chicago, Ill.
Traylor Engineering & Mfg. Co., Allentown, Pa.
Western Wheeled Scraper Co., Aurora, Ill.
Williams Pat. Crusher & Pulv. Co., Chicago, Ill.

PUMPING MACHINERY.

Cameron Steam Pump Wks., A.S., New York, N.Y.
Cook, A. D., Lawrenceburg, Ind.
Dayton-Dick Co., Quincy, Ill.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.

Emerson Pump & Valve Co., Alexandria, Va.
Goulds Mfg. Co., Seneca Falls, N. Y.

Lea-Courtney Co., Newark, N. J.
Lucy Mfg. Co., New York, N. Y.

Moffatt Machy. Mfg. Co., Charlotte, N. C.
Morris Machine Works, Baldwinville, N. Y.
Mutual Foundry & Machine Co., Atlanta, Ga.
Myers & Bro., E. E., Ashland, Ohio.

National Transit Pump & Mch. Co., Oil City, Pa.
Reilly Mfg. Co., J. J., Louisville, Ky.
Vogt Bros. Mfg. Co., Louisville, Ky.
Wood & Co., R. D., Philadelphia, Pa.

Worthington Pump & Mch. Corp., New York, N.Y.

PUMPS.

ACID PROOF.

Duriron Casting Co., Dayton, Ohio.

AIR LIFT.

Ingersoll-Rand Co., New York, N. Y.
Sullivan Machinery Co., Chicago, Ill.

ASPHALT AND ROAD OIL.

Kinney Mfg. Co., Boston, Mass.

BOILER FEED.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Cameron Steam Pump Wks., A.S., New York, N.Y.
Dayton-Dick Co., Quincy, Ill.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.

Lea-Courtney Co., Newark, N. J.
Lucy Mfg. Co., New York, N. Y.
Moffatt Machy. Mfg. Co., Charlotte, N. C.
Murray Iron Works Co., Burlington, Iowa.
Myers & Bro., E. E., Ashland, Ohio.
Reilly Mfg. Co., J. J., Louisville, Ky.

Vogt Bros. Mfg. Co., Louisville, Ky.
Worthington Pump & Mch. Corp., New York, N.Y.

CENTRIFUGAL.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Buffalo Steam Pump Co., Buffalo, N. Y.
Cameron Steam Pump Wks., A.S., New York, N.Y.
Dayton-Dick Co., Quincy, Ill.

Erle Pump & Engine Co., Medina, N. Y.
Goulds Mfg. Co., Seneca Falls, N. Y.
Lea-Courtney Co., Newark, N. J.
Lucy Mfg. Co., New York, N. Y.

Moffatt Machy. Mfg. Co., Charlotte, N. C.
Murray Iron Works Co., Burlington, Iowa.
Myers & Bro., E. E., Ashland, Ohio.
Reilly Mfg. Co., J. J., Louisville, Ky.

Vogt Bros. Mfg. Co., Louisville, Ky.
Worthington Pump & Mch. Corp., New York, N.Y.

DEEP WELL.

Cameron Steam Pump Wks., A.S., New York, N.Y.
Cook, A. D., Lawrenceburg, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Layne & Bowler Co., Memphis, Tenn.

DIAPHRAGM.

Novo Engine Co., Lansing, Mich.

DREDGING.

Buffalo Steam Pump Works, Buffalo, N. Y.
Erle Pump & Engine Co., Medina, N. Y.
Morris Machine Works, Baldwinville, N. Y.
Mutual Foundry & Machine Co., Atlanta, Ga.

Wood & Co., R. D., Philadelphia, Pa.
Worthington Pump & Mch. Corp., New York, N.Y.

FUEL-OIL.

Lockett & Co., Ltd., A. M., New Orleans, La.

HYDRAULIC.

Dunning & Boschert Press Co., Inc., Syracuse, N.Y.
Buffalo Steam Pump Co., Buffalo, N. Y.
Cameron Steam Pump Wks., A.S., New York, N.Y.
Cardwell Machine Co., Richmond, Va.

Dean Bros. Steam Pump Wks., Indianapolis, Ind.
French Oil Mch. Machinery Co., The, Piqua, Ohio.
Worthington Pump & Mch. Corp., New York, N.Y.

OIL.

Lockett & Co., Ltd., A. M., New Orleans, La.

POWER.

Lea-Courtney Co., Newark, N. J.
Worthington Pump & Mch. Corp., New York, N.Y.

STEAM.

Buffalo Steam Pump Co., Buffalo, N. Y.
Cameron Steam Pump Wks., A.S., New York, N.Y.
Cook, A. D., Lawrenceburg, Ind.

Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Emerson Pump & Valve Co., Alexandria, Va.
Lucy Mfg. Co., New York, N. Y.
Murray Iron Works Co., Burlington, Iowa.

National Transit Pump & Mch. Co., Oil City, Pa.
Reilly Mfg. Co., J. J., Louisville, Ky.
Vogt Bros. Mfg. Co., Louisville, Ky.
Worthington Pump & Mch. Corp., New York, N.Y.

TRIPLEX POWER.

Novo Engine Co., Lansing, Mich.

VACUUM.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Cameron Steam Pump Wks., A.S., New York, N.Y.
Dean Bros. Steam Pump Wks., Indianapolis, Ind.
Worthington Pump & Mch. Corp., New York, N.Y.

WATER-WORKS.

Dayton-Dick Co., Quincy, Ill.
Goulds Mfg. Co., Seneca Falls, N. Y.
Lea-Courtney Co., Newark, N. J.
Worthington Pump & Mch. Corp., New York, N.Y.

PUMP LEATHERS.

Graton & Knight Mfg. Co., Worcester, Mass.

PUNCHING AND SHEARING MACHINERY.

Bliss Co., E. W., Brooklyn, N. Y.

RAILROADS. (Offering Industrial, Agricultural and Commercial Opportunities.)
Carolina, Clinch, & O. R. R., Johnson City, Tenn.
Great Northern Railway, Savannah, Ga.
Georgia & Florida Ry. Co., Augusta, Ga.
Model Land Company of the Flagler System, St. Augustine, Fla.

RAILROAD EQUIPMENT AND SUPPLIES.

(New and Second-hand.)
American Frog & Switch Co., Hamilton, Ohio.
American Metallic Packing Co., Lexington, Ky.

American Rwy. Equipment Co., Pittsburgh, Pa.
Atlantic Equipment Co., The, New York, N. Y.
Bailey-Libby Co., The, Charleston, S. C.
Birmingham Rail & Loco. Co., Birmingham, Ala.

Carey Co., Thos. F., New York, N. Y.
Cincinnati Frog & Switch Co., Cincinnati, Ohio.
Foster Co., L. B., Pittsburgh, Pa.
General Electric Co., New York, N. Y.

Georgia Car & Locomotive Co., Atlanta, Ga.
Granville Co., Joseph D., St. Louis, Mo.
Harris Bros. Co., Chicago, Ill.
Hartfelder-Garbutt Machinery Co., Savannah, Ga.

Hoffman & Co., Inc., E. C., Baltimore, Md.
Houston Railway Car Co., Houston, Tex.
Hyde & Company, Pittsburgh, Pa.
Joseph Iron Co., The, Isaac, Cincinnati, Ohio.

Kilby Frog & Switch Co., Birmingham, Ala.
Kleinmans Co., H., Pittsburgh, Pa.
Light Railway Equipment Co., Philadelphia, Pa.
Machinery & Supply Co., Greenboro, N. C.

Males Co., The, New York, N. Y.
May & Turner Co., Atlanta, Ga.
Metzger, Louis H., Mobile, Ala.
Miller-Crippen Equip. Co., Inc., Syracuse, N. Y.

Moore Bros., Chicago, Ill.

Sherwood, E. C., New York, N. Y.

Southern Iron & Metal Co., Jacksonville, Fla.

Torbert, A. C., Chicago, Ill.

United Amer. Iron & Steel Co., New York, N. Y.

United Machine Works, New York, N. Y.

Weller Co., Inc., H. C., Jacksonville, Fla.

Weir Frog Co., Cincinnati, Ohio.

</

175

Diamond Bridge Co., Wilmington, Ohio.
Chesapeake Iron Works, Baltimore, Md.
Cincinnati Iron & Steel Co., Cincinnati, Ohio.
Des Moines Bridge & Iron Co., Des Moines, Iowa.
Dietrich Bros., Baltimore, Md.
Hoffman & Co., Inc., E. C. Baltimore, Md.
International Steel & Iron Co., Evansville, Ind.
Jones & Laughlin Steel Co., Pittsburgh, Pa.
Lackawanna Steel Co., Lackawanna, N. Y.
Memphis Steel Const. Co. of Pa., Pittsburgh, Pa.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
Phoenix Iron Co., Philadelphia, Pa.
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.
Reilly Mfg. Co., J. J., Louisville, Ky.
Republic Iron & Steel Co., Youngstown, Ohio.
Richmond Structural Steel Co., Richmond, Va.
Roanoke Iron & Bridge Works, Roanoke, Va.
Snead Architectural Iron Works, Louisville, Ky.
Steel Products Co., The Savannah, Ga.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Vincennes Bridge Co., Vincennes, Ind.
Virginia Bridge & Iron Co., Roanoke, Va.
Walsh & Weldner Boiler Co., Chattanooga, Tenn.

SULPHUR.
Freeport Sulphur Co., Freeport, Texas.

SULPHURIC ACID.
Davison Chemical Co., Baltimore, Md.
Du Pont de Nemours & Co., E. I., Wilmeton, De.

SUPER-HEATERS. (Steam.)
Babcock & Wilcox Co., New York, N. Y.
Power Specialty Co., New York, N. Y.

SURVEYING INSTRUMENTS.
Weber & Co., F., Philadelphia, Pa.

SWINGING ENGINES.
Duke Engine Co., Grand Haven, Mich.

SWITCHBOARDS, SWITCHES, ETC.
General Electric Co., Schenectady, N. Y.
West'house Elec. & Mfg. Co., East Pittsburgh, Pa.

SWITCHSTANDS.
Bethlehem Steel Co., South Bethlehem, Pa.
Central Frog & Switch Co., St. Louis, Mo.
Weir Frog Co., Cincinnati, Ohio.

TACKLE BLOCKS. (For Wire or Manila Rope.)
Brooklyn & Bascos Rope Co., St. Louis, Mo.
Topping Bros., New York, N. Y.

TALC PRODUCTS.
De Boto Talc Co., Chatsworth, Ga.
Harford Talc Co., Inc., The, Baltimore, Md.

TANKS.
CORRUGATED METAL K. D.
Tennessee Metal Culvert Co., Nashville, Tenn.

LEAD LINER.
Hauser-Stander Tank Co., The, Cincinnati, Ohio.

IRON AND STEEL.
American Bridge Co., New York, N. Y.
American Water Softener Co., Philadelphia, Pa.
Caldwell Co., Inc., W. E., Louisville, Ky.
Casey-Hedges Co., Chattanooga, Tenn.
Chattanooga Boiler & Tank Co., Chat'n'ga, Tenn.
Chicago Bridge & Iron Works, Chicago, Ill.
Des Moines Bridge & Iron Co., Des Moines, Iowa.
Hartley Boiler & Works, Montgomery, Ala.
Hendricks Mfg. Co., Carlanton, Ga.
Lombard Iron Works, Augusta, Ga.
Lookout Boiler & Mfg. Co., Chattanooga, Tenn.
Memphis Steel Const. Co. of Pa., Pittsburgh, Pa.
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.
Seale & Sons Co., Wm. R., Pittsburgh, Pa.
Schofield Iron Works, Macon, Ga.
Southern Roller & Tank Works, Memphis, Tenn.
Struthers-Wells Co., Warren, Pa.
Tennessee Metal Culvert Co., Nashville, Tenn.
Virginia Bridge & Iron Co., Roanoke, Va.
Walsh & Weldner Boiler Co., Chattanooga, Tenn.
West'house Traction Brake Co., Wilmerding, Pa.

PICKLETS.
Hauser-Stander Tank Co., The, Cincinnati, Ohio.

WOOL.
Caldwell Co., Inc., W. E., Louisville, Ky.
Davis & Son, G. M., Palatka, Fla.
Hauser-Stander Tank Co., The, Cincinnati, Ohio.
Pacific Tank & Pipe Co., San Francisco, Cal.

TAPES. (Measuring.)
Lufkin Rule Co., Saginaw, Mich.
Starrett Co., L. E., Athol, Mass.

TELEPHONES. (Supplies, Equipment.)
Piedmont Electric Co., Asheville, N. C.
Western Electric Co., New York, N. Y.

TELEPHONE SERVICE.
American Telephone & Telegraph Co.

THREADING AND TAPPING MACHINERY.
Webster & Perks Tool Co., The, Springfield, Ohio.

THRESHERS.
Cardwell Machine Co., Richmond, Va.

TIERING MACHINES. (Portable.)
Economy Engineering Co., Chicago, Ill.

TILE.
CLAY.
Northwestern Steel & Iron Wks., Eau Claire, Wis.
Oconee Brick & Tile Co., Milledgeville, Ga.
FLOOR, WALL, MARBLE, ETC.
Amer. Enam. Brick & Tile Co., New York, N. Y.
Hood Brick Co., B. Mifflin, Atlanta, Ga.
National Mosaic Tile Co., Inc., Mobile, Ala.

STRUCTURAL.
Oconee Brick & Tile Co., Milledgeville, Ga.

TILE SLABE.
Ludovick Celadco Co., Chicago, Ill.

TIMBERS. (Creosoted.)
American Creosote Works, New Orleans, La.
Republic Creosoting Co., Indianapolis, Ind.

TIME RECORDERS.
Eco Clock Co., Boston, Mass.
Newman Clock Co., New York, N. Y.

TIN AND TERNE PLATES.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
Libbey's Band Co., Warren, Ohio.
Trumbull Steel Co., Warren, Ohio.

TOBACCO MACHINERY.
Buckeye Iron & Brick Works, Dayton, Ohio.
Cardwell Machine Co., Richmond, Va.
Ripley Foundry & Machine Co., Ripley, Ohio.

TOOLS.
MACHINISTS.
Western Tool & Mfg. Co., Springfield, Ohio.
MECHANICAL.
Starrett Co., L. E., Athol, Mass.
PNEUMATIC.
Chicago Pneumatic Tool Co., Chicago, Ill.
Independent Pneumatic Tool Co., Chicago, Ill.
Ingersoll-Rand Co., New York, N. Y.

TOOLHOLDERS.
Western Tool & Mfg. Co., Springfield, Ohio.

TORCHES.
Wall Mfg. Supply Co., P., Allegheny, Pa.

TOWERS.
ELECTRIC TRANSMISSION.
American Bridge Co., New York, N. Y.
STEEL AND WOOD.
Caldwell Co., Inc., W. E., Louisville, Ky.
Chattanooga Boiler & Tank Co., Chat'n'ga, Tenn.
Chesapeake Iron Works, Baltimore, Md.
Des Moines Bridge & Iron Co., Des Moines, Ia.
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.
Walsh & Weldner Boiler Co., Chattanooga, Tenn.

TRAMPWAY.
OVERHEAD.
Spindel, J. G., Reading, Pa.
Yale & Towne Mfg. Co., New York, N. Y.

XUM

TRAMWAY.

WIRE ROPE.
American Steel & Wire Co., Chicago, Ill.
Broderick & Bascom Rope Co., St. Louis, Mo.
Caldwell & Son Co., H. W., Chicago, Ill.
Waterbury Co., New York, N. Y.

TRANSFORMERS.

General Electric Co., Schenectady, N. Y.
Westhouse Elec. & Mfg. Co., East Pittsburgh, Pa.

TRANSMISSION BEARINGS AND HANGERS.

Hyatt Roller Bearing Co., New York, N. Y.

TRENCH MACHINERY.

Ball Engine Co. (Erie Steam Shovel Co.), Erie, Pa.
Buckeye Traction Ditcher Co., Findlay, Ohio.
The Automatic Shovel Co., Lorain, Ohio.

TRUCKS.

DAY KILN.
Moore Dry Kiln Co., L., Jacksonville, Fla.
Motor. (Gasoline).
Garford Motor Truck Co., Lima, Ohio.
General Motors Truck Co., Pontiac, Mich.
International Motor Co., New York, N. Y.
U. S. Motor Truck Co., Cincinnati, Ohio.

PLATFORM, FREIGHT, MILL, FACTORY, ETC.

Chase Foundry & Mfg. Co., Columbus, Ohio.
Edwards Mfg. Co., Cincinnati, Ohio.

TRUCK TIRES.

Goodyear Tire & Rubber Co., Akron, Ohio.

TUBES. (Boiler.)

Allegheny Steel Co., Pittsburgh, Pa.
Cincinnati Iron & Steel Co., Cincinnati, Ohio.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
National Tube Co., Pittsburgh, Pa.

TUBE WELL STRAINERS.

Cook, A. D., Lawrenceburg, Ind.

TUBING. (Rubber.)

Cincinnati Rubber & Mfg. Co., Cincinnati, Ohio.
Goodyear Tire & Rubber Co., Akron, Ohio.

METAL.

Griffith, James F., Philadelphia, Pa.
La Belle Iron Works, Steubenville, Ohio.
Ward's Sons Co., Edgar T., Philadelphia, Pa.

TURBINES.

HYDRAULIC.
Davis Foundry & Machine Works, Rome, Ga.
Lefell & Co., James, Springfield, Ohio.
Smith Co., S. Morgan, York, Pa.
Trump Mfg. Co., The, Springfield, Ohio.
Wellman-Leaver-Morgan Co., The, Cleveland, O.

STEAM.

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Westhouse Elec. & Mfg. Co., East Pittsburgh, Pa.

TURN BUCKETS.

Broderick & Bascom Rope Co., St. Louis, Mo.
Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.

TURNTABLES.

American Bridge Co., New York, N. Y.
Virginia Bridge & Iron Co., Roanoke, Va.

TWIN.

Columbia Rope Co., Auburn, N. Y.

UNIONS.

Dart Mfg. Co., E. M., Providence, R. I.

UPHOLSTERING MATERIAL. (For Autos & Furniture.)

Du Pont Fabrickoid Co., Wilmington, Del.

VACUUM PANS.

Birmingham Mch. & Fdry. Co., Birmingham, Ala.

VALVES.

Bourbon Copper & Brass Wks. Co., Cincinnati, O.
Cincinnati Rubber & Mfg. Co., Cincinnati, Ohio.
Columbian Iron Works, Chattanooga, Tenn.
Crane Co., Chicago, Ill.
Frick Co., Waynesboro, Pa.
Glamorgan Pipe & Fdry. Co., Lynchburg, Va.
Goodyear Tire & Rubber Co., Akron, Ohio.
Lunkelheimer Co., The, Cincinnati, Ohio.
Vogt Mch. Co., Inc., Henry, Louisville, Ky.
Westhouse Traction Brake Co., Wilmerding, Pa.

VALVES.

ACID PROOF.
Durlon Casting Co., Dayton, Ohio.
Lunkelheimer Co., Cincinnati, Ohio.

GAS REVERSING.

Morgan Construction Co., Worcester, Mass.

VARNISH.

Arco Co., Cleveland, Ohio.

VAULT DOORS.

National Safe Co., Cleveland, Ohio.

VENEER CUTTING MACHINERY.

American-Blakelee Mfg. Co., Birmingham, Ala.
Titus, E. E., Petersburg, Va.

VENTILATING APPARATUS. (Engineers' and Contractors.)

Buffalo Forge Co., Buffalo, N. Y.
Carrier Engineering Corp., New York, N. Y.
Change Fan Co., Kalamazoo, Mich.
Skinner Bros. Mfg. Co., St. Louis, Mo.

VENTILATORS. (Roof.)

Edwards Mfg. Co., Cincinnati, Ohio.
Merchant & Evans Co., Philadelphia, Pa.

VISES.

Hollands Manufacturing Co., Erie, Pa.
Western Tool & Mfg. Co., Springfield, Ohio.

WAGONS. (Dump.)

Western Wheeled Scraper Co., Aurora, Ill.

WAGON LOADERS.

Bonney Supply Co., Inc., Rochester, N. Y.
Hals Mfg. Co., Geo., New York, N. Y.
Jeffrey Mfg. Co., Columbus, Ohio.
Link-Belt Co., Philadelphia, Pa.
Portable Machinery Co., Inc., Passaic, N. J.

WALL BOARD. (Walls, Ceilings, etc.)

Cornell Wood Products Co., Chicago, Ill.

WALL PLUGS. (Galvanized.)

Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.

WALL TIES.

Niagara Falls Metal Stamping Works, Niagara Falls, N. Y.

WASHING MACHINERY.

ORE AND PHOSPHATE.
Bailey Leiby Co., Charleston, S. C.

SAND AND GRAVEL.

Bonney Supply Co., Inc., Rochester, N. Y.
Davis Foundry & Machine Works, Rome, Ga.
Link-Belt Co., Philadelphia, Pa.

WASHERS.

COPPER, IRON, BRASS, ALUMINUM.
Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.

STIMPSON CO. EDWIN B., BROOKLYN, N. Y.

Topping Bros., New York, N. Y.

GRAPHITE AND BRONZE OIL-LESS.

Bound Brook Oil-less Brng. Co., Bound Brook, N. J.

WASHERS AND GASKETS. (Felt.)

Booth Felt Co., Inc., Brooklyn, N. Y.

WATERPROOFING. (Canvas.)

Robeson-Frederick Products Co., Port Huron, Mich.

WATERPROOFING. (For Brick, Concrete, Granite, etc.)

Arco Co., Cleveland, Ohio.
Sonneborn Sons, Inc., L., New York, N. Y.
Toch Bros., New York, N. Y.

WATER PURIFICATION.

Electric Ozone Sterilizer Co., Chicago, Ill.
Seafie & Sons Co., Wm. B., Pittsburgh, Pa.

WATER-SOFTENING APPARATUS.

American Water Softener Co., Philadelphia, Pa.
Dodge Sales & Engineering Co., Mishawaka, Ind.
International Filter Co., Chicago, Ill.
Pittsburgh Filter Mfg. Co., Pittsburgh, Pa.
Richmond Water Softening Co., Richmond, Ind.
Tucker & Laxton, Charlotte, N. C.

WATER STERILIZATION.

Electric Ozone Sterilizer Co., Chicago, Ill.

WATERWORKS, SUPPLIES, APPLIANCES.

American Cast Iron Pipe Co., Birmingham, Ala.
Harrison Copper & Brass Wks. Co., Cincinnati, O.
Cast Iron Pipe Publicity Bureau, New York, N. Y.
Caldwell-Wilcox Co., Newburgh, N. Y.
Columbian Iron Works, Chattanooga, Tenn.
Glamorgan Pipe & Fdry. Co., Lynchburg, Va.
Layne & Bowler Co., Memphis, Tenn.
Michigan Pipe Co., Bay City, Mich.
Standard Spiral Pipe Works, Chicago, Ill.
U. S. Cast Iron Pipe & Fdry. Co., Burlington, N. J.
Wood & Co., R. D., Philadelphia, Pa.

WATCHMAN'S PORTABLE CLOCKS.

Eco Clock Co., Boston, Mass.
Newman Clock Co., New York, N. Y.

WELDING APPARATUS. (Electric.)

Lincoln Electric Co., Cleveland, Ohio.

WELDING APPARATUS. (Oxy-Acetylene Process.)

Imperial Brass Mfg. Co., Chicago, Ill.
Imperial Brass Mfg. Co., Chicago, Ill.
Linde Air Products Co., New York, N. Y.

WELL CONTRACTORS. (Oil, Artesian, etc.)

Cook, A. D., Lawrenceburg, Ind.
Gray Artesian Well Co., Pensacola, Fla.
Hughes Specialty Well Drill Co., Charleston, S. C.
Layne & Bowler Co., Memphis, Tenn.

WELL TOOLS AND SUPPLIES.

Cook, A. D., Lawrenceburg, Ind.
Johnson Inc., Edward E., St. Paul, Minn.
Williams Bros., Ithaca, N. Y.

WHEELS AND AXLES.

Electric Wheel Co., Quincy, Ill.

WINDOW FRAMES AND SASH. (Fireproof.)

Detroit Steel Products Co., Detroit, Mich.
Lupton Sons Co., David, Philadelphia, Pa.
Trucon Steel Co., Youngstown, Ohio.

WINDOW GUARDS.

IRON AND STEEL.
Dexter Metal Mfg. Co., Camden, N. J.

WINDOW SASH. (Steel.)

Detroit Steel Products Co., Detroit, Mich.

WIRE.

BARBED WIRE, ETC.
American Steel & Wire Co., Chicago, Ill.
Atlantic Steel Co., Atlanta, Ga.

Gulf States Steel Co., Birmingham, Ala.

Page Steel & Wire Co., Adrian, Mich.
Youngstown Sheet & Tube Co., Youngstown, Pa.

COPPER CLAS STEEL.

Page Steel & Wire Co., New York, N. Y.

ELECTRICAL.

Page Steel & Wire Co., New York, N. Y.

FENCE.

Cyclone Fence Co., Waukegan, Ill.

FLAT AND ROUND.

Roebeling's Sons Co., John A., Trenton, N. J.

GALVANIZED AND ANNEALED.

Aborn Steel Co., New York, N. Y.
American Steel & Wire Co., Chicago, Ill.
Gulf States Steel Co., Birmingham, Ala.
Page Steel & Wire Co., Adrian, Mich.

INSULATED.

Electric Cable Co., New York, N. Y.

TELEPHONE, TELEGRAPH.

American Steel & Wire Co., Chicago, Ill.

WELDING.

Page Steel & Wire Co., New York, N. Y.

WIRE CLOTH. (Iron, Steel, Brass, etc.)

Caldwell & Son Co., H. W., Chicago, Ill.
Ludlow-Saylor Wire Co., St. Louis, Mo.
Meyer Mfg. Co., The, Fred. J., Hamilton, N. J.
New Jersey Wire Cloth Co., Trenton, N. J.
Wright Wire Co., The, Worcester, Mass.

WIRE COILING MACHINERY.

Sleeper & Hartley, Inc., Worcester, Mass.

WIRE GOODS.

Boles Iron & Wire Works, J. E., Detroit, Mich.
Cyclone Fence Co., Waukegan, Ill.
Dow Wire & Iron Works, Inc., Louisville, Ky.
Dufur & Co., Baltimore, Md.
Dufur, Baggett & Co., Baltimore, Md.
Gulf States Steel Co., Birmingham, Ala.
Meyer Mfg. Co., The, Fred. J., Hamilton, N. J.
Midvale Steel & Ordnance Co., Philadelphia, Pa.
New Jersey Wire Cloth Co., Trenton, N. J.
Stimpson Co., Edwin B., New York, N. Y.

WIRE NAIL MACHINERY.

Sleeper & Hartley, Inc., Worcester, Mass.

WIRE NETTING.

Ludlow-Saylor Wire Co., St. Louis, Mo.
New Jersey Wire Cloth Co., Trenton, N. J.

WIRE RODS.

Gulf States Steel Co., Birmingham, Ala.

WIRE ROPE CLIPS.

American Steel & Wire Co., Chicago, Ill.
Broderick & Bascom Rope Co., St. Louis, Mo.

WIRE STRAIGHTENING AND CUTTING MACHINERY.

Sleeper & Hartley, Inc., Worcester, Mass.

WOOD DISTILLATION EQUIPMENT.

Struthers-Wells Co., Warren, Pa.

WOOD PIPE. (For Water, etc.)

Michigan Pipe Co., Bay City, Mich.
Standard Wood Pipe Co., Williamport, Pa.
Wyckoff & Son Co., A., Elmira, N. Y.

WOOD. (Preservative.)

Barrett & Co., New York, N. Y.
Du Pont Chemical Works, New York, N. Y.

WOODWORKING MACHINERY.

Kline, Lewis T., Alpena, Mich.

WRENCH MANUFACTURERS.

Lakeville Forge Co., Erie, Pa.

YARN. (Tarred Steel.)

Columbian Rope Co., Auburn, N. Y.

ZINC.

New Jersey Zinc Co., New York, N. Y.

In writing advertisers please mention Manufacturers Record. Whenever you need any product not advertised, please tell us. We will find it for you.

Alphabetical Index of Advertisements.

A	American Tel. & Tel. Co..... 1	Beaudry & Co., Inc..... 23	Burnap, Geo..... 60	Clark Co., A. B..... 131	D
Abendroth & Root Mfg. Co..... 11	American Water Softener Co..... 2	Belmont Iron Works..... 46	Burns Engineering Co..... 165	Clark & Krebs..... 60	Dake Engine Co..... 1
Aborn Steel Co..... 40	Ames & Co., W..... 146	Bender Iron & Supply Co. S..... 3	Burner, E. C..... 133	Clark Bros. Co..... 127	Dart Mfg. Co., E. M..... 1
Achie Asbestos Covering & Supply Co..... 6	Ames Iron Works..... 3	Berger Mfg. Co..... 1	Byers Mch. Co., John F..... 137	Classified Opportunities..... 114, 115	Davis Foundry & Machine Works..... 1
Address Box 1114, People's Nat'l Bank Bldg..... 130	Ans Machine Co., Max..... 119	Berryman's Refrig. Mch. Ex..... 119	Bylesby & Co., H. M..... 61	Cleveland Belting & Mch. Co..... 126	Davis, George C..... 1
Aetna Explosives Co..... 135	Anchor Post Iron Wks..... 49	Bethlehem Steel Co..... 2		Clifford-Pratt Co..... 120	Davis, J. S..... 1
Agency Service Corp..... 109	Anderson Co., V. D..... 118	Bilney & Smith Co..... 42		Climax Mfg. Co..... 121	Davis, S. O. M..... 1
Alabama Companies..... 47	Arco Co., The..... 145	Binswanger & Co..... 48		Clinchfield Portland Cement Corp..... 53	Davison Chemical Co..... 1
Albany Lubricating Co..... 45	Arctic Ice Machine Co..... 14	Birmingham Mch. & Fdry. Co..... 62		Cocker Mch. & Fdry. Co..... 122	Daytona Public Service Co..... 1
Albert & Davidson, Inc..... 121	Arnold Co., The..... 60	Birmingham Rail & Loco. Co..... 131		Coldwell-Wilcox Co..... 158	Dayton-Dick Co..... 1
Allegheny Steel Co..... 47	Armo Iron Culvert & Flume Mfrs. Assn..... 145	Birmingham Slag Co..... 55		Columbia Graphophone Co..... 1	Dean Bros. Steam Pump Wks..... 1
Allen Engineering Co..... 1	Arzinger Mch. Co., W. O..... 149	Black & Co..... 103		Columbian Iron Works..... 154	De La Vergne Mch. Co..... 1
Allis-Chalmers Mfg. Co..... 4	Asher Fireproofing Co..... 55	Black & Veatch..... 20		Columbus Rope Co..... 21	Delaware Registration Trust Co..... 1
Allison, Walter A..... 60	Aspromet Co..... 53	Bliss Co., E. W..... 23		Columbus Truck & Supply Mfg. Co..... 123	Des Moines Bridge & Iron Co..... 1
Allright Mfg. Co..... 121	Atkins & Co., E. C., Inc..... 1	Bolles Iron & Wire Wks., J. E..... 48		Commonwealth Public Service Co..... 119, 122	Desmond-Stephan Dresser Mfg. Co..... 1
Alpha Photo Engraving Co..... 140	Atlantic, Gulf & Pacific Co..... 117	Bond Fdry. & Mch. Co..... 1		Concrete Steel Bridge Co..... 61	De Soto Talc Co..... 1
Aluminum Co. of America..... 9	Atlantic Equipment Co..... 131	Bonney Supply Co..... 142		Concrete Steel Engineering Co..... 60	Detroit Steel Products Co..... 1
Alvey-Ferguson Co..... 25	Atlas Powder Co..... 135	Booth Felt Co..... 11		Concrete Steel Co..... 40	Dexter Metal Mfg. Co..... 1
Alvey Mfg. Co..... 28	Austin Company..... 2	Borne, Crymser Co..... 15		Connecticut Light & Power Co..... 126	Dick Bros..... 1
American Appraisal Co..... 61	Austin Mfg. Co..... 2	Boston Economy Lamp Division..... 9		Consolidation Coal Co..... 1	Dick Engineering & Installation Co..... 1
American Ballast Co..... 145	Austin-Western Road Mch. Co..... 132	Boston Iron & Metal Co..... 121, 125		Consolidated Expanded Metal Companies..... 34	Dixie Portland Cement Co..... 1
American-Blakelee Mfg. Co..... 133, 163	B	Bowditch-Ard Mch. & Fdy. Co..... 133		Consolidated Machinery & Wrecking Co..... 126	Dixon Crucible Co., Jos..... 1
American Boron Products Co..... 30	Babecock & Wilcox Co..... 30	Bound Brook Oil-less Bearing Co..... 31		Continental Gin Co..... 1	Dodge Sales & Eng'g Co., Inc..... 1
American Bridge Co..... 46	Babson Statistical Organization..... 108	Bourbon Copper & Brass Wks. Co..... 158		Contractors' Machinery & Supply Co..... 129	Dominion Asbestos & Rubber Corp..... 1
American Cast Iron Pipe Co..... 158	Bacon & Sons, A. S..... 149	Box 369..... 127		Cook & Laurie Gravel Co..... 141	Dorman Co., J. F. W..... 1
American Cement Mch. Co..... 142	Bailey-Leiby Co..... 12	Brackett, F. Ernest..... 60		Cooley & Marvin Co..... 60	Double Crescent Hog Farm..... 1
American Cement Tile Mfg. Co..... 33	Baldwin Locomotive Works..... 134	Bradford Belting Co..... 1		Cooper & Co., Hugh L..... 60	Doubleday-Hill Electric Co..... 1
American Chain Co..... 1	Baltimore Audit Co..... 1	Brecht Co..... 1		Correll Wood Products Co..... 1	Dow & Smith..... 1
American Cresote Wks..... 51	Baltimore Builders Exchange..... 1	Brier Hill Steel Co..... 32		Corrugated Bar Co..... 1	Dow Wire & Iron Works..... 1
American Elevator & Mch. Co..... 31	Baltimore Office Sup. Co..... 109	Broderick & Bascom Rope Co..... 68, 134		Cortright Metal Roofing Co..... 35	Draper Corporation..... 1
American Enamelled Brick & Tile Co..... 12, 30	Baltimore Oil Engine Co..... 6	Brookhaven Pressed Brick & Mfg. Co..... 50		Cosden & Co..... 15	Dunkirk Laundry Co..... 1
American Forge & Switch Co..... 118, 132	Bancroft & Sons Co., Jos..... 121	Brooks Engineering Co., C. L..... 60		Du Pont Chemical Works..... 1	Dunning & Boesch Press Co..... 1
American Frost & Machine..... 117	Bankard Lumber & Mch. Co..... 122	Brown, Eugene C..... 62		Du Pont Belting Works..... 1	Du Pont de Nemours & Co., E. I..... 1
American Hoist & Derrick Co..... 124, 127	Bank of Alabama, The..... 109	Bruch, H. M..... 1		Duriron Castings Co..... 1	Duriron Castings Co..... 1
American Metallic Packing Co..... 131	Bannan Pipe Co., F..... 156	Buchanan Co., C. G..... 150		Duquesne Elec. & Mfg. Co..... 1	Duriron Castings Co..... 1
American Process Co..... 149	Barnett Co., G. & H..... 23	Buckeye Iron & Brass Works..... 164			
American Pulley Co..... 24	Bartlett & Snow Co., C. O..... 1	Buckeye Machine Co..... 140			
American Pulverizer Co..... 180	Bauer Bros. Co..... 1	Buckeye Traction Ditcher Co..... 147			
American Ry. Equip. Co..... 156	Bay City Dredge Works..... 119, 134	Buffalo Contr. Plant Corp..... 137			
American Sealing Co..... 24		Buffalo Forge Co..... 1			
American Sheet & Tin Plate Co..... 54		Buffalo Steam Pump Co..... 116			
American Spiral Pipe Works..... 165		Buffalo-Springfield Roller Co..... 142			
American Steel Export Co..... 1		Burgess & Co., D. H..... 108			
American Steel & Wire Co..... 20		Burlington Grain Elevator Co..... 122			

177

XUM



Do You Think There is No Competition?

If anyone thinks there is no competition amongst the big packers he ought to go through a day's work with Swift & Company.

Let him begin at the pens when the live stock comes in; let him try to buy a nice bunch of fat steers quietly and at his own price, without somebody's bidding against him.

Let him realize the scrupulous care taken at the plant that not one thing is lost or wasted in order that cost may be held to a minimum.

Let him go up into the office where market reports are coming in,—and reports of what other concerns are doing.

Let him watch the director of the Swift Refrigerator fleet, maneuvering it over the face of the country like a fleet of battleships at sea.

Let him take a trip with a Swift & Company salesman and try to sell a few orders of meat.

Let him stay at a branch house for an hour or two and see the retail meat dealers drive their bargains to the last penny as they shop around among the packers' branch houses, the wholesale dealers, and the local packing plants.

And then, when the day is over, let him have half an hour in the accounting department, where he can see for himself on what small profits the business is done. (Less than 4 cents on each dollar of sales.)

If he still thinks there is no competition in the meat business it will be because he wants to think so.

SWIFT & COMPANY, - - U. S. A.





Coal

Millions of years before the advent of man, Nature was preparing for his comfort. In the gray dawn of the world—when gigantic saurians dragged their ungainly bodies through thickets of giant ferns, when mighty tempests beat to earth trees as tall as cathedral spires, when flying reptiles bigger than aeroplanes rushed screaming through the air—She was laying the foundations of our coal beds.


But the coal that is in our mines today would be valueless without the power to get it out. Without the power of explosives it would have been impossible to produce, during the past year, the six-hundred-million tons that have played so vital a part in supplying the needs of our armies.

The Hercules Powder Company is one of the largest producers of mining explosives in the world. From its vast plants come a large proportion of the dynamite used by the coal miners of the country; men who are bending every effort to the patriotic task of supplying our Nation with the coal it needs to carry on to victory.

HERCULES POWDER CO.

Chicago	Pittsburg, Kan.	Salt Lake City
Denver	Pittsburgh, Pa.	San Francisco
Hazleton, Pa.	Memphis	St. Louis
Joplin	New York	Wilmington, Del.

HERCULES POWDER CO.



It is unthinkable that there should be any slackening in the outpouring of Munitions, Ordnance or Supplies to our boys "at the front"---Yet this is what occurs when the factors of EFFICIENCY and QUALITY are overlooked in purchasing High Speed Steel.

"Red Cut Superior"

The Nationally Known--First Quality
High Speed Steel

more than equal to every demand and strain of war time service---deep cuts and heavy feeds, at speeds to the full capacity of your machines, and Long Life of the cutting edge---these are a few of the reasons for the supremacy of Red Cut Superior

VANADIUM-ALLOYS STEEL CO.

WORKS LATROBE, PA.

GENERAL SALES OFFICES, PITTSBURGH, PA.

If interested in High Speed Steel
 matter at intervals send us your

and you care to receive our printed
 name and address for our mailing list

